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PRC

**PRELIMINARY ASSESSMENT/
VISUAL SITE INSPECTION**

**ENGINUITY, INC.
(FORMERLY ALBANY PLATING WORKS, INC.)
ALBANY, INDIANA
IND 094 470 028**

FINAL REPORT

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460**

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CONTENTS

<u>Section</u>	<u>Page</u>
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1
2.0 FACILITY DESCRIPTION	4
2.1 FACILITY LOCATION	4
2.2 FACILITY OPERATIONS	4
2.2.1 Facility Layout	4
2.2.2 History of Ownership and Operations	6
2.2.3 Manufacturing and Related Process	8
2.3 WASTE GENERATION AND MANAGEMENT	10
2.4 HISTORY OF DOCUMENTED RELEASES	23
2.5 REGULATORY HISTORY	24
2.6 ENVIRONMENTAL SETTING	29
2.6.1 Climate	29
2.6.2 Flood Plain and Surface Water	29
2.6.3 Geology and Soils	30
2.6.4 Groundwater	31
2.7 RECEPTORS	31
3.0 SOLID WASTE MANAGEMENT UNITS	33
4.0 AREAS OF CONCERN	56
5.0 CONCLUSIONS AND RECOMMENDATIONS	57
REFERENCES	74

Appendix

- A VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS
- B VISUAL SITE INSPECTION FIELD NOTES

Attachment

- A REMOVAL ACTION PLAN FOR ENGINUITY, INC., BY WESTON-SPER
- B ON-SCENE COORDINATOR'S REPORT, CERCLA REMOVAL ACTION, ENGINUITY, INC., BY U.S. EPA

FIGURES

<u>Figure</u>		<u>Page</u>
1	FACILITY LOCATION	5
2	FACILITY LAYOUT	13

TABLES

<u>Table</u>		<u>Page</u>
1	SOLID WASTE MANAGEMENT UNITS	11
2	SOLID WASTES	14
3	SWMU SUMMARY	69

RELEASED
DATE 9/29/99
RIN #
INITIALS WV

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EXECUTIVE SUMMARY

PRC Environmental Management, Inc. (PRC), performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the Enginuity, Inc. (Enginuity), formerly Albany Plating Works, Inc. (Albany Plating), facility in Albany, Delaware County, Indiana. This summary highlights the results of the PA/VSI and the potential for releases of hazardous wastes or hazardous constituents from SWMUs identified.

The Enginuity facility is an abandoned zinc electroplating facility where electroplating was conducted from the 1930s to 1975 and again from 1978 to 1986. Some metal stamping work was also conducted in another area of the facility in the 1980s.

The facility is located on about a 10-acre lot, with about 130,000 square feet covered by one large building. The building consists of five areas, three of which are leased to three different entities; a fourth area contained the abandoned electroplating operation; and the fifth area contained Enginuity's metal stamping works. The fifth area is currently leased to one of the three entities operating on site.

PRC could not use the facility's Part A permit application as a basis for the VSI because the application showed only about 60 percent of the electroplating area and none of the SWMUs that were located outdoors. PRC, therefore, conducted the VSI of those areas of the site that were covered in two RCRA compliance inspections conducted by the Indiana Department of Environmental Management (IDEM) in 1987 and in a CERCLA emergency removal action taken by the U.S. Environmental Protection Agency (EPA) in 1989. These areas include all of the Enginuity-owned operations at the site, which comprise the entire abandoned electroplating area, the former metal stamping area, and all SWMUs located outdoors.

The facility was owned by McCormick Brothers Corporation (McCormick Brothers) from the 1930s to 1978, by KDM Investment Corporation (KDM) from 1978 to 1982, and by Enginuity from 1982 to the present. The electroplating part of the facility was operated by McCormick Brothers from the 1930s to 1978; by Albany Plating from 1978 to 1981; by Enginuity from 1981 to 1984; and by

DATE _____
RIN # _____
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DATE 9/29/99
RIN # _____
INITIALS WAV

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D & H Manufacturing, Inc. (D&H) from 1984 to 1986. No electroplating work has been conducted at the facility since 1986. The current owner of the facility is Dennis J. McCarthy of Springfield, Ohio, who is also the president of Enginuity.

The Enginuity facility generated and managed 13 hazardous and 4 nonhazardous wastes. Hazardous wastes generated and managed at the facility include waste lacquer (D001 and F005); cyanide-bearing wastewater (F007); waste cyanide solution (F007); caustic stripping bath (D002); cyanide-bearing wastewater treatment sludge (F006 and F008); cyanide and metal-bearing wastewater treatment flocculent (F006, F008, and D007); metal-bearing wastewater treatment sludge (F006 and D007); waste acid (D002); obsolete laboratory chemicals (D002, U103, and others); cyanide-contaminated wood (F007); cyanide-contaminated soil (F007); decontamination rinsate (F007 and D007); and waste fuel oil and polychlorinated biphenyl (PCB)-bearing waste transformer oil (D001). Nonhazardous wastes generated and managed at the facility include waste personal protective equipment (PPE), crushed steel drums, scrap steel, and oil-soaked rags. All cyanide-bearing wastes and waste lacquer were generated and left on site by McCormick Brothers.

Enginuity is currently regulated as a treatment, storage, and disposal (TSD) facility. Albany Plating submitted a Part A permit application for a part of the electroplating area to EPA in 1980. This application specified process codes for container storage (S01), referring to the Former Enclosed Container Storage Area (CSA) (SWMU 1); storage in a tank (S02), referring to the Former Cleaning Tank (SWMU 8); and treatment of hazardous wastewater in tanks (T01), referring to the Abandoned Wastewater Treatment Plants (WWTP) (SWMU 12). This application listed F006 and F007 waste codes.

In March 1986, a court injunction stopped the facility's electroplating operations because the facility was in violation of RCRA and National Pollutant Discharge Elimination System (NPDES) permit requirements.

In 1989, EPA conducted a CERCLA emergency removal action and removed all wastes and most of the process and storage tanks to off-site locations. However, none of the regulated SWMUs has undergone RCRA closure.

At the time of the VSI, the electroplating area of the facility was abandoned. According to a facility representative, EPA is currently in litigation with Enginuity for cost recovery. EPA had taken Enginuity to court to place a lien of \$558,000 on Enginuity's assets.

The PA/VSI identified the following 22 SWMUs and no AOCs at the facility:

Solid Waste Management Units

1. Former Enclosed CSA
2. Former Drum Room CSA
3. Former Lacquer Room CSA
4. Abandoned Concrete Loading Dock
5. Former Waste Acid Storage Tank
6. Former Enclosed Waste Acid CSA
7. Former Flocculent Storage Tank
8. Former Cleaning Tank
9. Former Pickling Tank
10. Former Stripping Tank
11. Abandoned Floor Drains
12. Abandoned WWTPs
13. Abandoned Electroplating Laboratory
14. Former Waste Lacquer Underground Storage Tank (UST)
15. Abandoned Spill-Control UST
16. Former Underground Railroad Tank Car
17. Former Decontamination Rinsate Satellite Accumulation Area (SAA)
18. Former Decontamination Rinsate Storage Area
19. Former Outdoor CSA
20. Former Nonhazardous Waste Accumulation Area
21. Former Western Outdoor CSA
22. Former Northern Outdoor CSA

RELEASED
DATE 9/29/99
RIN #
INITIALS MV

Although only SWMUs 1, 8, and 12 were identified by the facility as RCRA-regulated units in its Part A permit application, SWMUs 2, 3, 5, 6, 7, and 15 were operated as RCRA-regulated units because these six units also stored hazardous wastes for more than 90 days. SWMUs 1, 3, 6, and 7 have had no history of documented releases.

Currently, all SWMUs pose a low potential for future release to all environmental media because the sources of the potential release have been removed. SWMUs 2, 5, 8, and 12 have had documented releases. Releases of an undetermined quantity of waste cyanide solution (F007) from SWMU 2 to

RELEASED
DATE 9/29/99
RIN #
INITIALS UV

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on-site soils were documented in 1989. A release of between 1 and 3 gallons of waste acid (D002) from SWMU 5, which apparently did not impact any environmental media, was documented and addressed in 1988. A release of cyanide from SWMU 8 to air, which apparently did not impact human health, was also documented in 1988. Releases of chromium and zinc, and those of chromium, zinc, and cyanide from SWMU 12 to surface water were documented in 1982 and 1985, respectively. These releases from SWMU 12 occurred in violation of the facility's NPDES permit limits. SWMUs 4, 14, 15, and 16 posed a low to moderate potential for release to the environment. SWMU 11 contained waste at the time of the VSI. The conclusions for each environmental medium are discussed below.

SWMU 2 has had releases to on-site soils. SWMU 14 posed a moderate potential for release to on-site soils because this SWMU was an UST which allegedly had holes in it. In addition, the facility could not provide any evidence that SWMU 14 was not leaking or had adequate secondary containment. SWMUs 4, 12, 15, and 16 posed a low to moderate potential for release to on-site soils. SWMU 4 has deep cracks and did not have any release controls. SWMU 12 has had documented releases to surface water and the contaminants could have seeped from the surface water into sediments. SWMUs 15 and 16 are abandoned and former USTs, respectively. The facility could not provide any evidence that SWMUs 15 and 16 were not leaking or that they had adequate secondary containment.

SWMU 14 posed a moderate potential for release to groundwater because this SWMU was a UST which allegedly had holes in it. In addition, the facility could not provide any evidence that SWMU 14 was not leaking or had adequate secondary containment. SWMUs 2, 4, 12, 15, and 16 posed a low to moderate potential for release to groundwater. SWMU 2 has had releases to on-site soils and the contaminants could have migrated from on-site soils to the groundwater. SWMU 4 has had deep cracks in the concrete and did not have any release controls. SWMU 12 has had releases to the surface water and the contaminants could have seeped from the surface water into the groundwater. SWMUs 15 and 16 are the abandoned and former USTs, respectively. The facility could not provide any evidence that SWMUs 15 and 16 were not leaking or that they had adequate secondary containment. Groundwater is found at a depth of only about 12 feet below the ground surface.

SWMU 12 has had releases to surface water. SWMU 2 posed a low to moderate potential for release to surface water because this unit has had releases to on-site soils and the contaminants could have migrated from on-site soils to surface water. SWMU 4 posed a low to moderate potential for release to surface water because this SWMU is an outdoor open dock that has had no secondary containment.

All SWMUs pose a low potential for release to air because all wastes were removed from the facility in 1989 and the likelihood of any volatiles still being present in amounts that would impact the air is low.

Groundwater is used for human consumption in the City of Albany. The nearest drinking water well, owned by the City of Albany, **Non-responsive, well location** Well logs suggest that the groundwater near the facility flows in a westerly direction. The nearest surface water body, Halfway Creek, is located about 1,500 feet west (downstream) of the facility and it is not used for drinking water. The nearest sensitive environment, a temporary palustrine forested wetland of about 15 acres, is 0.2 mile southeast (downstream) of the facility. The nearest residence is about 100 feet east of the facility. The site has a chain-link fence. However, employees of the three current lessees of the building have access to the abandoned electroplating area because some walls of the electroplating building were partly removed during the CERCLA emergency removal action in 1989.

Based on the PA/VSI's findings, PRC recommends the following further actions:

- RCRA close the Former Enclosed CSA (SWMU 1).
- RCRA close the Former Drum Room CSA (SWMU 2). Collect subsurface soil samples from the excavated floor of SWMU 2 and analyze them for cyanide; if elevated cyanide concentrations are detected in the subsurface soil, collect surface water samples from the NPDES Outfall No. 001 and groundwater samples from an area downgradient of SWMU 2 for cyanide analyses.
- RCRA close the Former Lacquer Room CSA (SWMU 3).
- Collect subsurface soil samples from the vicinity of the Abandoned Concrete Loading Dock (SWMU 4) and analyze for volatile organic compounds (VOC), cyanide, chromium, and zinc; if elevated VOC, cyanide, chromium, and zinc concentrations are detected in the subsurface soil, sample groundwater from areas downgradient of SWMU 4 and analyze for VOCs, cyanide, chromium, and zinc.

RELEASED
DATE 9/29/99
RIN #
INITIALS

ES-5

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- RCRA close the Former Waste Acid Storage Tank (SWMU 5).
- RCRA close the Former Enclosed Waste Acid CSA (SWMU 6).
- RCRA close the Former Flocculent Storage Tank (SWMU 7).
- RCRA close the Former Cleaning Tank (SWMU 8).
- Remove wastes from the Abandoned Floor Drains (SWMU 11) to authorized off-site facilities for further handling.
- RCRA close the Abandoned WWTPs (SWMU 12). Collect water and sediment samples from the open ditch downstream of NPDES Outfall No. 001 and from Halfway Creek and analyze for cyanide, chromium, and zinc; if elevated cyanide, chromium, and zinc concentrations are detected in the water or sediments, sample groundwater from areas downgradient of the NPDES outfall and analyze for cyanide, chromium, and zinc.
- Collect subsurface soil samples from the location of the Former Waste Lacquer UST (SWMU 14) and analyze for VOCs; if elevated VOC concentrations are detected in the subsurface soil, collect groundwater samples from an area downgradient of SWMU 14 for VOC analysis.
- RCRA close the Abandoned Spill-Control UST (SWMU 15). Collect subsurface soil samples from the vicinity of SWMU 15 and analyze for cyanide, chromium, and zinc; if elevated cyanide, chromium, and zinc concentrations are detected in the subsurface soil samples, collect groundwater samples from areas downgradient of SWMU 15 and analyze for cyanide, chromium, and zinc.
- Collect subsurface soil samples from the location of the Former Underground Railroad Tank Car (SWMU 16) and analyze for PCBs, semivolatile organic compounds (SVOC), and total petroleum hydrocarbons (TPH); if elevated PCB, SVOC, and TPH concentrations are detected in the subsurface soil, collect groundwater samples from an area downgradient of SWMU 16 and analyze for PCBs, SVOCs, and TPHs.

PRC recommends no further actions at SWMUs 9, 10, 13, 17, 18, 19, 20, 21, and 22 at this time.

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 DATE 9/29/99
 RIN #
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1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC), received Work Assignment No. R05032 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES 9) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in Region 5.

As part of the EPA Region 5 Environmental Priorities Initiative, the RCRA and CERCLA programs are working together to identify and address RCRA facilities that have a high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of prioritizing facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential releases to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, regardless of whether the unit was intended to manage solid or hazardous waste.

The SWMU definition includes the following:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that EPA has usually exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include a wood preservative drippage area, a loading or unloading area, or an area where solvent used to wash large parts has continually dripped onto soils.

An AOC is defined as any area where a release of hazardous waste or constituents to the environment has occurred or is suspected to have occurred on a nonroutine and nonsystematic basis. This includes any area where a strong possibility exists that such a release might occur in the future.

The purpose of the PA is as follows:

- Identify SWMUs and AOCs at the facility
- Obtain information on the operational history of the facility
- Obtain information on releases from any units at the facility
- Identify data gaps and other informational needs to be filled during the VSI

The PA generally includes review of all relevant documents and files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is as follows:

- Identify SWMUs and AOCs not discovered during the PA
- Identify releases not discovered during the PA
- Provide a specific description of the environmental setting
- Provide information on release pathways and the potential for releases to each medium
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases

The VSI includes interviewing appropriate facility staff; inspecting the entire facility to identify all SWMUs and AOCs; photographing all visible SWMUs; identifying evidence of releases; making a preliminary selection of potential sampling parameters and locations, if needed; and obtaining additional information necessary to complete the PA/VSI report.

This report documents the results of a PA/VSI of the Enginuity, Inc. (Enginuity), formerly Albany Plating Works, Inc. (Albany Plating), facility (EPA Identification No. IND 094 470 028) in Albany,

Delaware County, Indiana. The PA was completed on March 8, 1993. PRC gathered and reviewed information from the Indiana Department of Natural Resources (IDNR), the Indiana Department of Environmental Management (IDEM), the Federal Emergency Management Agency (FEMA), the National Wetlands Inventory (NWI), the U.S. Department of Agriculture (USDA), the U.S Geological Survey (USGS), and from EPA Region 5 RCRA files. The VSI was conducted on March 11, 1993. It included an interview with a facility representative and a walk-through inspection of the facility. PRC identified 22 SWMUs and no AOCs at the facility.

The VSI is summarized and 13 of the 25 inspection photographs are included in Appendix A. The photographs have been renumbered; thus, their numbers differ from the photograph numbers in the VSI field notes, which are included in Appendix B. A removal action plan for Enginuity by Weston-Sper of Chicago, Illinois, is included in Attachment A. An EPA On-Scene Coordinator's report on CERCLA removal action at Enginuity is included in Attachment B.

2.0 FACILITY DESCRIPTION

This section describes the facility's location; past and present operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors.

2.1 FACILITY LOCATION

The Enginuity facility is located at 501 East State Street in Albany, Delaware County, Indiana (latitude 40°18'00"N and longitude 85°14'10"W) (Albany Plating 1980a), as shown in Figure 1. The facility occupies approximately 10 acres in a residential area of the City of Albany. The facility is bordered on the north, east, and west by residences and on the south by a warehouse and farmlands.

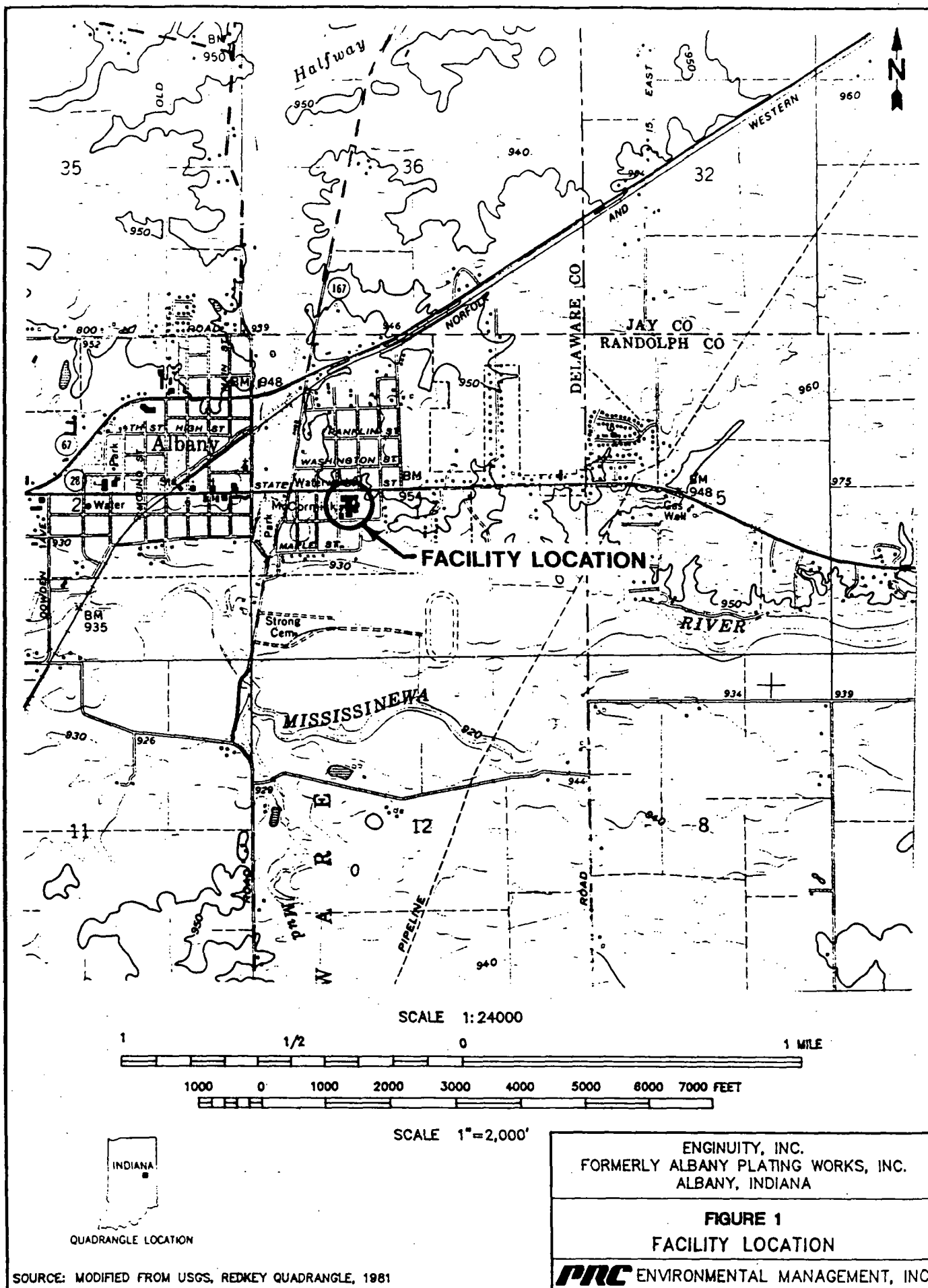
2.2 FACILITY OPERATIONS

This section describes the facility layout, histories of ownership and operations, and manufacturing and related processes.

2.2.1 Facility Layout

The Enginuity facility is an abandoned zinc electroplating facility where electroplating operations were carried out from the 1930s through 1975 and again from 1978 through 1986. No electroplating has been carried out at the facility since March 1986. Some metal fabrication and stamping works were also carried out at the facility from 1981 through 1989.

The facility is located on a 10-acre lot which contains one large building with a total floor area of approximately 130,000 square feet. According to a facility representative, the building is divided into the following five areas: (1) an abandoned electroplating area, (2) a former metal stamping area, (3) a cardboard manufacturing area, (4) a cardboard box manufacturing area, and (5) an aerobic dance classroom area. The abandoned electroplating and the former metal stamping areas contained Enginuity-owned operations from 1981 to 1986 and from 1984 to 1989, respectively. Since 1989, the



former metal stamping area has been leased to Grief Brothers Corporation (GBC), a cardboard box manufacturing entity. The cardboard and cardboard box manufacturing areas are leased to, and operated by, Sinflex Paper Company (Sinflex) and GBC, respectively. The aerobic dance classroom has been operated by Gerry Reynolds of Albany, Indiana, since July 1992. Sinflex manufactures single-faced cardboard for packaging purposes and has been operating at this site since 1983; prior to 1983 this area was leased to a firm who used it for storing merchandise for flea markets. GBC manufactures cardboard boxes for glass industry packing and has been operating at this site since 1984. Prior to 1984, this part of the building was vacant for several years.

PRC could not use the facility's Part A permit application (Albany Plating 1980a) as a basis for the VSI because the application was incomplete and contained discrepancies (EPA 1981). The application showed only about 60 percent of the electroplating area and none of the SWMUs that were located outdoors. PRC, therefore, conducted the VSI of those areas of the site that were covered in two RCRA compliance inspections conducted by IDEM in 1987 and in a CERCLA emergency removal action taken by EPA in 1989, as part of the facility's EPA ID Number IND 094 470 028. These areas include all of the Enginuity-owned operations at the site, which comprise the entire abandoned electroplating area, the former metal stamping area, and all SWMUs located outdoors.

2.2.2 History of Ownership and Operations

According to a facility representative, the northern part of the building was built sometime in the late 1800s and was used as a hotel. The identity of the original builder of the facility is not available. Sometime in the 1930s, McCormick Brothers Corporation (McCormick Brothers) acquired the original building, which included the present cardboard manufacturing and the aerobic dance classroom areas, and annexed additional buildings to the facility and began electroplating operations on site. McCormick Brothers manufactured zinc electroplated refrigerator shelves. It employed up to 300 people during the peak production period in the late 1960s. McCormick Brothers discontinued the electroplating operation in 1975.

In July 1978, McCormick Brothers sold the facility to KDM Investment Corporation (KDM). KDM manufactured air conditioning wires on site. Albany Plating, a subsidiary of KDM, leased the southern part of the now abandoned electroplating area from KDM and conducted zinc electroplating

work on site from 1978 through August 1981 (DRWH 1982). Information is not available on the number of employees at KDM or Albany Plating.

In late 1981, Enginuity, with Dennis J. McCarthy as its president, became the operator of the electroplating part of the facility. Enginuity purchased various plating equipment from KDM and began zinc electroplating work at the facility under Albany Plating's Part A permit application.

In September 1982, Enginuity purchased the building and the land at the facility by mortgage foreclosure and became the owner of the facility. Enginuity has retained ownership of the facility since that time.

In February 1984, D&H Manufacturing Inc. (D&H), of Albany, Indiana, leased the electroplating and metal stamping areas of the facility from Enginuity and became the operator. D&H was jointly operated by Joyce Walker of Muncie, Indiana, and Dennis J. McCarthy's two sons, Michael and Kelly McCarthy.

In March 1986, a court injunction stopped D&H's electroplating operations because the facility was not in compliance with RCRA and National Pollutant Discharge Elimination System (NPDES) permit requirements (IDEM 1987a). In April 1986, D&H evacuated the facility and Enginuity took over D&H's liabilities. EPA and IDEM did not allow Enginuity to resume electroplating operations because hazardous wastes and hazardous constituents were present on site. No electroplating work has taken place at the facility since March 1986.

In 1987, Enginuity began "powder-paint coating" refrigerator shelf tracks and trouble-light guards in the former metal stamping area of the facility.

All the facility process tanks and their contents remained on site until 1989, except the spent potassium chloride solution which Dennis J. McCarthy sold as a product sometime after March 1987 (PRC 1993a and IDEM 1987a).

In 1989, EPA took a CERCLA emergency removal action at the facility during which it removed all wastes and most waste management tanks to off-site locations. The electroplating area of the facility has remained abandoned since 1989.

In December 1989, Enginuity discontinued all operations in the former metal stamping area of the facility. At the time of the VSI, the former metal stamping area of the facility was leased to GBC who was using it to store products. No Enginuity-owned operations were taking place at the facility at the time of the VSI.

2.2.3 Manufacturing and Related Process

The facility's method of zinc electroplating did not change significantly since the 1930s. The facility electroplated wire shelves by successively running them through a stripping tank containing sodium hydroxide, a pickling tank containing muriatic acid, a rinsing tank containing water, and an electroplating tank containing a mixture of sodium cyanide, zinc, and boric acid. After the shelves were electroplated, the facility rinsed the shelves in water and dipped them into chromic acid which made the shelves corrosion resistant. The facility then coated the shelves with a solvent-based lacquer in the facility's lacquer room. Albany Plating, Enginuity, and D&H all conducted zinc electroplating in the same way as McCormick Brothers, with the exception that they did not use sodium cyanide in the electroplating tank. Albany Plating replaced sodium cyanide with ammonium chloride (Albany Plating 1980a), and Enginuity and D&H both replaced it with potassium chloride.

Between 1984 and 1986, in addition to electroplating shelves and racks, D&H also fabricated hog-feeder skids and squeeze-mop parts which were electroplated on site. The fabrication part involved straightening, cutting, and welding low-carbon steel wire.

After the court-ordered ban on electroplating operations at the site, Enginuity took over facility operations from D&H in April 1986, and conducted metal stamping, trouble-light guard fabrication, and powder-paint coating in the metal stamping area of the facility. In the metal stamping operation, the facility stamped trouble-light guards with a steel press. In the powder coating operation, the facility received pre-plated wire shelves and racks from off-site sources. The facility hung these shelves on racks and put them through a titanium dioxide epoxy which melted and formed a gel on

the wire shelves and racks. These were then put through a fluidized bed of powder paint coating, which electrostatically adhered to the shelves and racks. These units were then put in an oven at a temperature of 380 °F. After cooling, the shelves and racks were shipped off site to facility customers. According to a facility representative, Enginuity did not generate any wastes from the powder-paint coating process. The facility discontinued the fabrication of trouble-light guards and powder-paint coating process in 1989.

The facility operated two wastewater treatment plants (WWTP) on site. These plants were located below floor level in the southwestern part of the electroplating area. They are referred to as the northern WWTP and the southern WWTP in this report. The WWTPs treated industrial wastewaters generated at the facility. The northern WWTP was used by McCormick Brothers from the early 1970s to 1978. The southern WWTP was used by Albany Plating, Enginuity, and D&H between 1978 and 1986. Enginuity did not use the northern WWTP because when Enginuity took over the electroplating operations at the facility, the plant was abandoned and had stored waste cyanide.

The facility had three underground storage tanks (UST) on site: a Former Waste Lacquer Storage UST (SWMU 14), an Abandoned Spill-Control UST (SWMU 15), and a Former Underground Railroad Tank Car (SWMU 16). SWMU 14 was a 600-gallon steel tank located outside the lacquer room. In this unit, McCormick Brothers initially stored virgin lacquer which was disposed of as waste during the CERCLA emergency removal action in 1989. According to a facility representative, this unit was not used by Enginuity. It was removed by EPA in 1989 and sent off site for recycling as scrap metal. SWMU 15 was a 10000-gallon concrete tank which was built by McCormick Brothers to hold spill materials from the facility. The spill material was removed from this unit to an off-site location for disposal by EPA in 1989 and the UST was abandoned on site. SWMU 16 was a 20000-gallon steel tank located outside the southeast corner of GBC's operation area. It stored virgin fuel oil for on-site boilers during McCormick Brothers' operation. In 1985, D&H added polychlorinated biphenyl (PCB)- bearing waste transformer oil to the virgin fuel oil that was already stored in this unit. The contents of this unit were removed off site by EPA in 1989 for fuel blending, the unit was sent off site for scrap metal, and the cavity was backfilled.

The facility has an empty 1200-gallon aboveground steel tank outside the southwest corner of the electroplating area. It stored virgin muriatic acid for facility use. It has been empty since about 1981 (PRC 1993a).

The facility has an aboveground water tank and an attached pump room which are located about 100 feet south of Oak Street. This tank provides water for the facility's fire safety because the City of Albany does not supply water for this purpose. An abandoned water well is located about 80 feet northeast of the water tank. When in operation, this well provided water for the water tank. At the time of the VSI, a wooden protective cover on the well had collapsed and PRC could not examine the inside of the well.

2.3 WASTE GENERATION AND MANAGEMENT

This section describes waste generation and management at the Enginuity facility. The facility's SWMUs are identified in Table 1. The facility layout, including SWMUs, is shown in Figure 2. The facility's waste streams are summarized in Table 2.

Various operators of the Enginuity facility generated and managed 13 hazardous and 4 nonhazardous wastes at the facility (Albany Plating 1980a; EPA 1991; IDEM 1987a; PRC 1993a; and Weston-Sper 1989). Hazardous wastes generated and managed at the facility include waste lacquer (D001 and F005); cyanide-bearing wastewater (F007); waste cyanide solution (F007); caustic stripping bath (D002); cyanide-bearing wastewater treatment sludge (F006 and F008); cyanide and metal-bearing wastewater treatment flocculent (F006, F008, and D007); metal-bearing wastewater treatment sludge (F006 and D007); waste acid (D002); obsolete laboratory chemicals (D002, U103, and others); cyanide-contaminated wood (F007); cyanide-contaminated soil (F007); decontamination rinsate (F007 and D007); and waste fuel oil and PCB-bearing waste transformer oil mixture (D001). Nonhazardous wastes generated and managed at the facility include waste personal protective equipment (PPE); crushed steel drums; scrap steel; and oil-soaked rags. Facility generation and management of both hazardous and nonhazardous wastes are discussed below.

TABLE 1
SOLID WASTE MANAGEMENT UNITS

<u>SWMU Number</u>	<u>SWMU Name</u>	<u>RCRA Hazardous Waste Management Unit^a</u>	<u>Status</u>
1	Former Enclosed Container Storage Area (CSA)	Yes ^b	Abandoned ^c
2	Former Drum Room CSA	Yes ^d	Abandoned ^c
3	Former Lacquer Room CSA	Yes ^d	Abandoned ^c
4	Abandoned Concrete Loading Dock	No	Abandoned
5	Former Waste Acid Storage Tank	Yes ^d	Removed off site for scrap metal ^c
6	Former Enclosed Waste Acid CSA	Yes ^d	Abandoned ^c
7	Former Flocculent Storage Tank	Yes ^d	Removed off site for scrap metal ^c
8	Former Cleaning Tank	Yes ^b	Removed off site for scrap metal ^c
9	Former Pickling Tank	No ^e	Removed off site for scrap metal
10	Former Stripping Tank	No ^e	Removed off site for scrap metal
11	Abandoned Floor Drains	No	Abandoned
12	Abandoned WWTPs	Yes ^b	Abandoned ^c
13	Abandoned Electroplating Laboratory	No	Abandoned
14	Former Waste Lacquer UST	No ^e	Removed off site for scrap metal
15	Abandoned Spill-Control UST	Yes ^d	Abandoned on site ^c
16	Former Underground Railroad Tank Car	No ^e	Removed off site for scrap metal

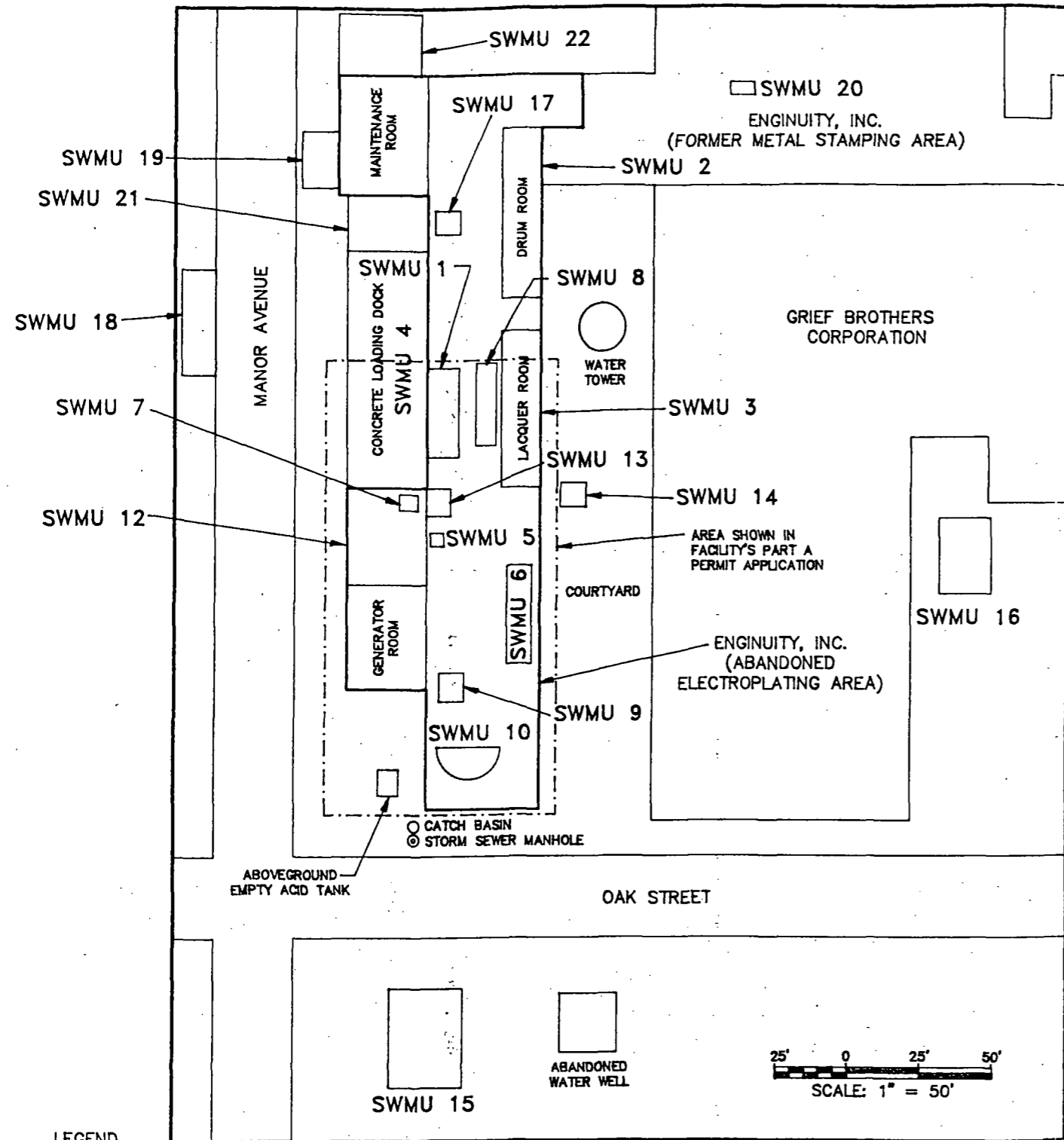
TABLE 1

SOLID WASTE MANAGEMENT UNITS (Continued)

<u>SWMU Number</u>	<u>SWMU Name</u>	<u>RCRA Hazardous Waste Management Unit^a</u>	<u>Status</u>
17	Former Decontamination Rinsate SAA	No ^f	Abandoned
18	Former Decontamination Rinsate Storage Area	No ^f	Inactive
19	Former Outdoor CSA	No	Abandoned
20	Former Nonhazardous Waste Accumulation Area	No	Inactive
21	Former Western Outdoor CSA	No	Abandoned
22	Former Northern Outdoor CSA	No	Inactive

Notes:

- ^a A RCRA hazardous waste management unit is one that currently requires or formerly required submittal of a RCRA Part A or Part B permit application.
- ^b The facility identified this SWMU as a RCRA-regulated unit in its Part A permit application.
- ^c This unit underwent a CERCLA emergency removal action in 1989, but it has not undergone RCRA closure.
- ^d This unit was not shown as a RCRA-regulated unit in the facility's Part A permit application, but PRC identified information documenting that the unit was used to store hazardous wastes for more than 90 days.
- ^e This unit either stored a product or it was a process tank during facility operations. It became a SWMU because its contents were removed as waste during the CERCLA emergency removal action.
- ^f This unit did not require a RCRA Part A permit application because it managed hazardous wastes during a CERCLA emergency removal action.



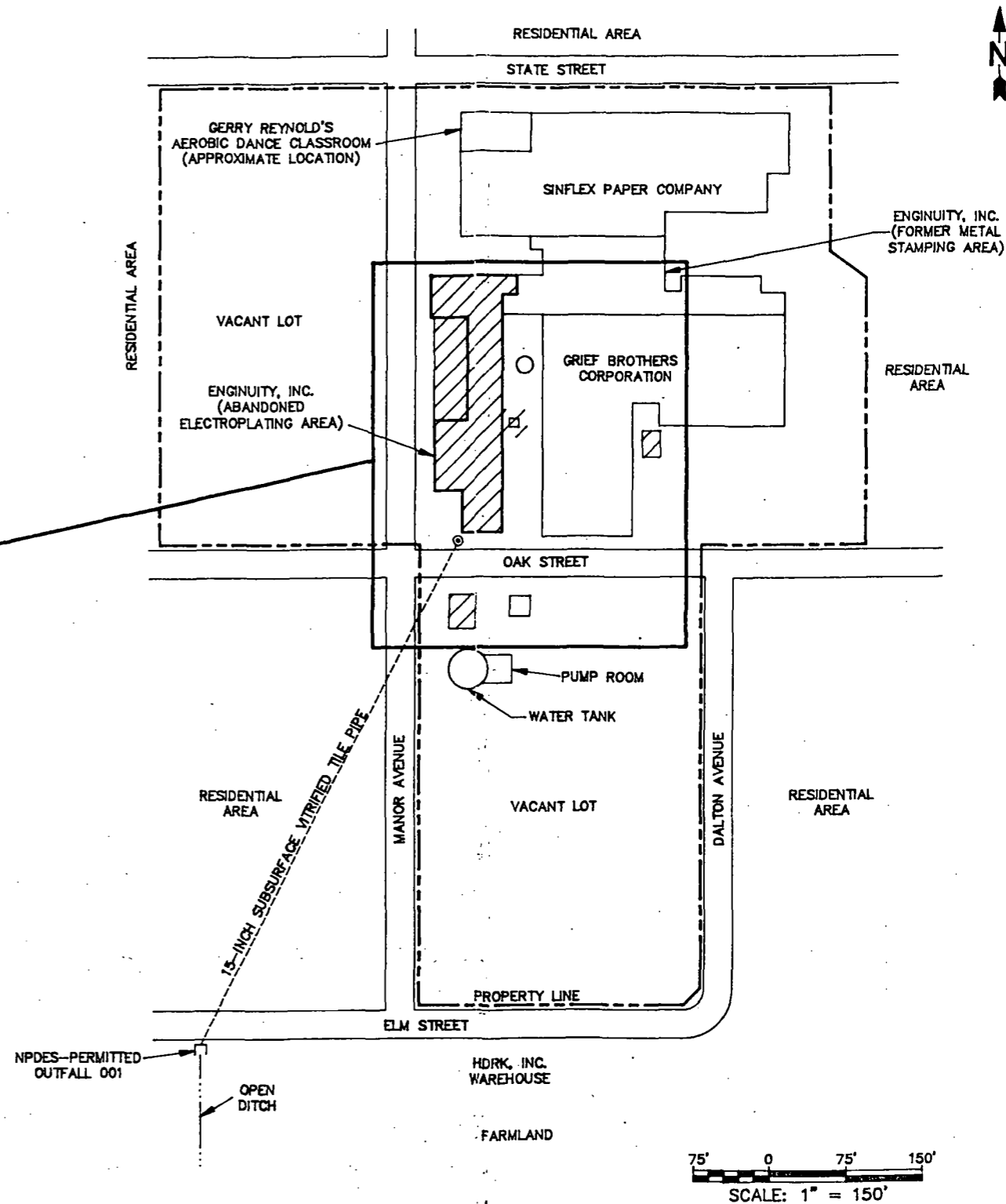
LEGEND

- | | |
|---|---|
| SWMU 1 FORMER ENCLOSED CONTAINER STORAGE AREA (CSA) | SWMU 13 ABANDONED ELECTROPLATING LABORATORY |
| SWMU 2 FORMER DRUM ROOM CSA | SWMU 14 FORMER WASTE LACQUER UNDERGROUND STORAGE TANK (UST) |
| SWMU 3 FORMER LACQUER ROOM CSA | SWMU 15 ABANDONED SPILL-CONTROL UST |
| SWMU 4 ABANDONED CONCRETE LOADING DOCK | SWMU 16 FORMER UNDERGROUND RAILROAD TANK CAR |
| SWMU 5 FORMER WASTE ACID STORAGE TANK | SWMU 17 FORMER DECONTAMINATED RINSATE SATELLITE ACCUMULATION AREA (SAA) |
| SWMU 6 FORMER ENCLOSED WASTE ACID CSA | SWMU 18 FORMER DECONTAMINATED RINSATE STORAGE AREA |
| SWMU 7 FORMER FLOCCULENT STORAGE TANK | SWMU 19 FORMER OUTDOOR CSA |
| SWMU 8 FORMER CLEANING TANK | SWMU 20 FORMER NONHAZARDOUS WASTE ACCUMULATION AREA |
| SWMU 9 FORMER PICKLING TANK | SWMU 21 FORMER WESTERN OUTDOOR CSA |
| SWMU 10 FORMER STRIPPING TANK | SWMU 22 FORMER NORTHERN OUTDOOR CSA |
| SWMU 11 ABANDONED FLOOR DRAINS | |
| SWMU 12 FORMER WASTEWATER TREATMENT PLANTS (WWTP) | |

AREA OF 1989 CERCLA EMERGENCY REMOVAL ACTION

NOTE: SWMU 11 IS LOCATED THROUGHOUT THE ABANDONED ELECTROPLATING AREA OF THE FACILITY.

SOURCE: MODIFIED FROM ENGINUITY SKETCH RECEIVED MARCH 11, 1993



ENGINUITY, INC.
FORMERLY ALBANY PLATING WORKS, INC.
ALBANY, INDIANA

FIGURE 2
FACILITY LAYOUT

PRC ENVIRONMENTAL MANAGEMENT, INC.

TABLE 2
SOLID WASTES

<u>Waste/EPA Waste Code^a</u>	<u>Source</u>	<u>Solid Waste Management Unit^b</u>
Waste lacquer/D001 and F005	Lacquer coating	3 and 14
Cyanide-bearing wastewater ^b /F007	Electroplating	12
Waste cyanide solution/F007	Electroplating and wastewater treatment	1, 2, 8, 11, 12, and 15
Caustic stripping bath/D002	Electroplating	10, 11, and 15
Cyanide-bearing wastewater treatment sludge/F006 and F008	Wastewater treatment	2, 4, 11, 12, and 15
Cyanide and metal-bearing wastewater treatment flocculent/F006, F008, and D007	Wastewater treatment	4, 7, 11, 12, and 15
Metal-bearing wastewater treatment sludge/F006 and D007	Wastewater treatment	11, 12, and 15
Waste acid/D002	Electroplating	5, 6, 9, 11, 12, and 15
Obsolete laboratory chemicals ^b /D002, U103, and others ^c	Obsolete laboratory chemicals disposed of as waste	1 and 13
Cyanide-contaminated wood ^b /F007	Spills and leaks from drums storing waste cyanide solution	2
Cyanide-contaminated soil ^b /F007	Spills and leaks from drums storing waste cyanide solution	2
Decontamination rinsate ^b /D007 and F007	CERCLA emergency removal action	11, 15, 17 and 18
Waste fuel oil and PCB-bearing waste transformer oil mixture ^b /D001	Facility maintenance	16
Waste PPE ^b /NA	CERCLA emergency removal action	19

TABLE 2
SOLID WASTES (Continued)

<u>Waste/EPA Waste Code^a</u>	<u>Source</u>	<u>Solid Waste Management Unit^{b, c}</u>
Crushed steel drums ^b /NA	CERCLA emergency removal action	19
Scrap steel/NA	Metal stamping	20 and 21
Oil-soaked rags/NA	Metal stamping	22

Notes:

- ^a Not applicable (NA) designates nonhazardous waste.
- ^b The generation of this waste was a one-time occurrence.
- ^c These EPA waste codes apply only to those obsolete chemicals whose names were available from a facility representative; additional codes may apply.

The facility stored hazardous wastes on site in containers (process code S01) and tanks (process code S02) for more than 90 days. The facility has also treated hazardous process wastewater generated on site in tanks (process code T01) (Albany Plating 1980a). The facility stored hazardous wastes in 55-gallon drums in four enclosed CSAs (SWMUs 1, 2, 3, and 6), two aboveground tanks (SWMUs 5 and 7), and two USTs (SWMUs 15 and 16). One UST (SWMU 14) originally stored a product but it became a SWMU because the product it stored was disposed of as waste during the CERCLA emergency removal action in 1989 (EPA 1991). In addition, three aboveground tanks (SWMUs 8, 9, and 10) were originally part of the electroplating process, also became SWMUs because the content of SWMU 8 was identified by the facility as waste in its Part A permit application (Albany Plating 1980a) and the contents of SWMUs 9 and 10 were removed as hazardous wastes during the CERCLA emergency removal action in 1989. The facility also accumulated hazardous wastes in 55-gallon drums in the Abandoned Concrete Loading Dock (SWMU 4) and the Abandoned WWTPs (SWMU 12) (IDEM 1987a).

During the 1989 CERCLA emergency removal action, some of the hazardous waste management units were removed off site and some were cleaned up and abandoned on site (EPA 1991). However, none of the RCRA-regulated units has undergone RCRA closure.

Six of the hazardous waste streams and two nonhazardous waste streams were not generated routinely at the facility and, therefore, each represents a one-time occurrence. The six hazardous wastes not generated routinely at the facility include cyanide-bearing wastewater (F007), obsolete laboratory chemicals (D002, U103, and others), cyanide-contaminated wood (F007), cyanide-contaminated soil (F007), decontamination rinsate (D007 and F007), and waste fuel oil and PCB-bearing waste transformer oil mixture (D001). The two nonhazardous wastes not generated routinely at the facility include waste PPE and crushed steel drums.

Waste lacquer (D001 and F005) was generated by McCormick Brothers prior to 1978 from the lacquer coating of zinc-plated refrigerator shelves. The facility zinc plated the shelves on site and then moved them to the facility's lacquer room where they were dipped in an aboveground, 300-gallon steel tank containing lacquer. The lacquer waste was generated by periodic cleaning of this tank. From the 1930s until 1989, the facility stored waste lacquer in 55-gallon drums in the

Former Lacquer Room CSA (SWMU 3). Additional waste lacquer was generated when EPA removed lacquer as waste from the Former Waste Lacquer UST (SWMU 14) during the CERCLA emergency removal action in 1989. During the CERCLA emergency removal action, EPA sent about 800 gallons of waste lacquer to Environmental Waste Control, Inc. (EWC), of Inkster, Michigan, for fuel blending (EPA 1991). No information is available concerning the rate of waste lacquer generation or whether or not the facility operated any satellite accumulation areas (SAA) to manage this waste. According to a facility representative, Enginuity and D&H did not generate this waste because the operators did not lacquer coat their products.

Cyanide-bearing wastewater (F007) is the untreated wastewater left on site by McCormick Brothers when they sold the facility to KDM in 1978. McCormick Brothers left about 2,700 gallons of the waste in the collection tank of the northern Abandoned WWTP (SWMU 12) (Weston-Sper 1989). One sample of the waste, collected by the EPA Technical Assistance Team (TAT) in October 1988, showed a cyanide content below the laboratory detection limit (Weston-Sper 1989). During the CERCLA emergency removal action in 1989, EPA pumped the waste into 55-gallon drums and shipped them as hazardous waste to CyanoKEM, Inc. (CyanoKEM), in Detroit, Michigan, and to Heritage Environmental Services (Heritage) in Indianapolis, Indiana, for treatment and disposal (EPA 1991).

Waste cyanide solution (F007) was generated by the electroplating process in the 5500-gallon Former Cleaning Tank (SWMU 8) and by the treatment of wastewater in the Abandoned WWTPs (SWMU 12). SWMU 8 was a process tank left on site by McCormick Brothers. The cyanide solution was identified as waste by the facility in its Part A permit application (Albany Plating 1980a) and was removed as waste during the 1989 CERCLA emergency removal action. Prior to 1978, when this unit was a process tank, spills from this tank collected in the Abandoned Floor Drains (SWMU 11) from where they were routed to the Abandoned Spill Control CSA (SWMU 15). During a site visit by the TAT in October 1988, the waste yielded a pH of 11; a Draeger detector tube reading of 2 parts per million (ppm) of hydrogen cyanide (HCN) gas in the atmosphere above the tank; a sample of the solution collected by the TAT yielded a cyanide content of 8.07 percent (Weston-Sper 1989). Prior to 1978, waste cyanide solution (F007) was also generated by the separation of spent cyanide solution from wastewater in the Abandoned WWTPs (SWMU 12) (PRC 1993a). Information is not available on the rate of generation of this waste. The facility stored

this waste in 55-gallon drums in the Former Enclosed CSA (SWMU 1) and the Former Drum Room CSA (SWMU 2). During the 1989 CERCLA emergency response action, EPA containerized this waste and sent some of it to the CyanoKEM facility in Detroit, Michigan, and the remainder to the Heritage facility in Indianapolis, Indiana, for treatment and disposal.

Caustic stripping bath (D002) was generated by the electroplating process in a 1200-gallon process tank where shelves and racks were stripped clean before undergoing electroplating. The tank contained 11,000 gallons of spent sodium hydroxide. The sodium hydroxide had been abandoned by Enginuity in the Former Stripping Tank (SWMU 10) in 1986 and was removed as waste during the 1989 CERCLA emergency removal action. Prior to 1978, when this unit was a process tank, spills from this tank collected in the Abandoned Floor Drains (SWMU 11) from where the spilled caustic stripping bath was routed to the Abandoned Spill-Control UST (SWMU 15). The waste had a pH greater than 12.5 (Weston-Sper 1989). During the CERCLA emergency removal action, EPA containerized the waste and sent it to the CyanoKEM facility in Detroit, Michigan, for treatment and disposal.

Cyanide-bearing wastewater treatment sludge (F006 and F008) was generated by the treatment of wastewater prior to 1978 and was left on site by McCormick Brothers. The sludge was formed in the settling tank of the northern Abandoned WWTP (SWMU 12). Information is not available on the rate of waste generation. The October 1988 inspection by the TAT revealed that the facility had stored the waste in 55-gallon drums in the Former Drum Room CSA (SWMU 2). Prior to 1978, spills of this waste accumulated in the Abandoned Floor Drains (SWMU 11) of the facility from where the waste was routed to the Abandoned Spill-Control UST (SWMU 15). The facility also accumulated this waste in the Abandoned Concrete Loading Dock (SWMU 4) in 55-gallon drums. EPA removed a total of 185 drums of "waste cyanide solids," including this waste. Information on the quantity of waste cyanide solid removed by EPA is not available because EPA records do not document a breakdown of different types of waste cyanide solids removed from the facility (EPA 1991). Two dry sludge samples collected by the TAT in October 1988 showed cyanide concentrations of 0.9 and 2.0 percent, respectively. During the CERCLA emergency removal action in 1989, EPA removed some of the waste to the CynoKEM facility in Detroit, Michigan, and the remainder to the Heritage facility in Indianapolis, Indiana, for treatment and disposal (EPA 1991).

Cyanide and metal-bearing wastewater treatment flocculent (F006, F008 and D007) was generated by the treatment of wastewater prior to 1978. This flocculent contained cyanide, chromium, and zinc and was generated in the treatment tank of the northern Abandoned WWTP (SWMU 12). The flocculent was periodically removed for storage from the treatment tank for storage in the Former Flocculent Storage Tank (SWMU 7) by using a mechanical plow (PRC 1993a). Prior to 1978, spills of this waste accumulated in the Abandoned Floor Drains (SWMU 11) of the facility from where the waste was routed to the Abandoned Spill-Control UST (SWMU 15). The facility also accumulated this waste in the Abandoned Concrete Loading Dock (SWMU 4) in 55-gallon drums. A sample collected by TAT in October 1988, showed 4,932 ppm total chromium; 40,920 ppm zinc; and 15.3 ppm cyanide. Information is not available on the rate of generation of this waste (Weston-Sper 1989). During the CERCLA emergency removal action in 1989, EPA repacked about 2,000 gallons of this waste in 55-gallon drums and removed them to the CyanoKEM facility in Detroit, Michigan, for treatment and disposal (EPA 1991).

Metal-bearing wastewater treatment sludge (F006 and D007) was generated by the treatment of wastewater after 1978 by Albany Plating, Enginuity, and D&H. The sludge contained chromium and zinc. It did not contain cyanide because, according to a facility representative, the operators did not use any cyanide in the plating solution. The waste was generated in the settling tank of the southern Abandoned WWTP (SWMU 12). Spills of this waste accumulated in the Abandoned Floor Drains (SWMU 11) of the facility, from where the waste was routed to the Abandoned Spill-Control UST (SWMU 15). According to a facility representative, the facility generated a total of about two 55-gallon drums of this waste during operations by Albany Plating and D&H. The waste was stored in 55-gallon drums in the Abandoned WWTPs (SWMU 12). During the 1989 CERCLA emergency removal action, EPA removed the waste to the CynoKEM facility in Detroit, Michigan, and to the Heritage facility in Indianapolis, Indiana, for treatment and disposal. EPA removed a total of 185 drums of waste cyanide solids, which included this waste. Information on the quantity of the waste removed by EPA is not available because EPA records do not document a breakdown of different types of waste cyanide solids removed from the facility (EPA 1991).

Waste acid (D002) was generated by the electroplating process. Muriatic acid was used to pickle shelves and racks in the Former Pickling Tank (SWMU 9). It had a < 1 pH (Weston-Sper 1989). The facility periodically pumped this spent acid from the pickling tank to a 600-gallon Former Waste

Acid Storage Tank (SWMU 5) for reuse at the facility. The facility reused the acid to adjust the pH of the process wastewater in the Abandoned WWTPs (SWMU 12). According to a facility representative, waste acid was not moved to any off-site location until the CERCLA emergency response action in 1989. In October 1988, TAT detected a release of waste acid from SWMU 5, and EPA requested that the facility to transfer the waste acid from SWMU 5 into secure containers. The facility pumped the waste acid into five 55-gallon drums and placed them in the Former Enclosed Waste Acid CSA (SWMU 6) located in the electroplating area (Weston-Sper 1989). In 1986, when electroplating operations ceased on site, Enginuity abandoned the pickling tank with the spent acid in it. The spent acid was removed as waste during the CERCLA emergency removal action in 1989. When this unit was a process tank, spills from this tank collected in the Abandoned Floor Drains (SWMU 11) from where the spilled waste acid was routed to the Abandoned Spill-Control UST (SWMU 15). The facility also generated waste chromic acid by making zinc-plated shelves corrosion resistant. The facility had one 55-gallon drum of waste chromic acid stored in SWMU 6 during the CERCLA emergency removal action in 1989. During this action, EPA containerized all waste acid from this and other SWMUs and sent it to the Heritage facility in Indianapolis, Indiana, for treatment and disposal (EPA 1991).

Obsolete laboratory chemicals (D002, U103, and others) were generated in the Former Electroplating Laboratory (SWMU 13) of the facility when a variety of unused chemicals became obsolete and were removed from the facility as waste during the 1989 CERCLA emergency removal action. The facility also stored a variety of obsolete laboratory chemicals in 55-gallon drums in the Former Enclosed CSA (SWMU 1) (Weston-Sper 1989). These chemicals were removed from the facility as waste during the 1989 CERCLA emergency removal action. The names of all the chemicals stored in SWMUs 1 and 13 are not available. However, the facility representative told PRC that sodium hydroxide and sulfuric acid were used in the laboratory (PRC 1993a). During the CERCLA emergency removal action in 1989, EPA packed four 55-gallon drums of obsolete chemicals and sent them to the ThermalKEM, Inc. (ThermalKEM) facility in Rock Hill, South Carolina, for incineration (EPA 1991).

Cyanide-contaminated wood (F007) and cyanide-contaminated soil (F007) were both generated by the seepage of waste cyanide solution (F007) into the wooden floor and the underlying soil. The waste cyanide solution was released during spills and leaks from drums stored in the Former Drum Room

CSA (SWMU 2). A spill from the drums was first documented during a TAT inspection of the facility on October 19, 1988 (Weston-Sper 1989). Information is not available on the date and quantity of the spill. During the CERCLA emergency removal action in 1989, EPA removed all wood floorings and the underlying 8 to 10 inches of visually contaminated soil from the Former Drum Room CSA (SWMU 2). EPA stored both of these wastes in 55-gallon drums in SWMU 2 during the CERCLA emergency removal action. A total of 37 55-gallon drums of cyanide-contaminated wood (F007) and cyanide-contaminated soil (F007) was removed during the CERCLA emergency removal action and was sent to the ThermalKEM facility in Rock Hill, South Carolina, for incineration (EPA 1991).

Decontamination rinsate (D007 and F007) was generated at the facility by the decontamination of equipment, floors, and tanks during the 1989 CERCLA emergency removal action. During decontamination, all tanks, equipment, and floor areas of the WWTPs and the electroplating areas were soaked with sodium hypochlorite solution which allowed the cyanide to break down and which produced chlorine gas as a by-product. The pre-soaked surfaces were then hosed off with water to wash off any residual cyanide contamination. Most of the decontamination rinsate was captured in a 1200-gallon PVC container and was accumulated in the Former Decontamination Rinsate SAA (SWMU 17) located inside the electroplating area. When full, this container was moved to the Former Decontamination Rinsate Storage Area (SWMU 18) for temporary storage. Some of the decontamination rinsate was collected in the Abandoned Floor Drains (SWMU 11) from where it was routed to the Abandoned Spill-Control UST (SWMU 15). A total of 14,600 gallons of this waste was removed to the Clean Harbors, Inc. (CHI), facility in Chicago, Illinois, for treatment and disposal (EPA 1991).

Waste fuel oil and PCB-bearing waste transformer oil mixture (D001) was generated when the facility replaced on-site transformers in 1985 and poured the waste transformer oil into virgin fuel oil already in a 20000-gallon tank. This mixture was removed off site as waste during the 1989 CERCLA emergency removal action. The facility generated about 2,000 gallons of this waste and stored it in a 20000-gallon Former Underground Railroad Tank Car (SWMU 16) with the intention of using it for fuel (PRC 1993a). Analysis of a sample of this waste collected by TAT in October 1988 showed a PCB concentration of 4.75 ppm (Weston-Sper 1989). During the CERCLA emergency removal

action in 1989, EPA removed this waste to the Systec, Inc. (Systec), facility in Greencastle, Indiana, for fuel blending (EPA 1991).

Nonhazardous waste PPE was generated by collecting used PPE during the CERCLA emergency removal action in 1989. The waste PPE was decontaminated on site and then stored temporarily in the Former Outdoor CSA (SWMU 19). EPA sent 40 cubic yards of the waste PPE to the Chemical Waste Management (Chem Waste) facility in Emelle, Alabama, for landfilling and two 55-gallon drums of this waste to the ThermalKEM facility in Rock Hill, South Carolina, facility for incineration (EPA 1991).

Nonhazardous crushed steel drums were generated by collecting contaminated empty drums on site during the CERCLA emergency removal action in 1989. EPA decontaminated and then crushed the steel drums on site with a drum crusher. The steel drums were then accumulated in the Former Outdoor CSA (SWMU 19). A local salvager transported this waste to an off-site facility for recycling (EPA 1991).

Nonhazardous scrap steel was generated from metal stamping operations between 1984 and 1989 under the operation of both Enginuity and D&H. According to a facility representative, this waste was generated from off-specification products and metal trimmings. Between 1986 and 1989, Enginuity generated a total of about 4,000 pounds of this waste. From 1984 to 1986, D&H generated this waste at a rate of 50 to 100 pounds per year. The facility accumulated the waste in a 2-cubic-yard steel bin located in the Former Nonhazardous Waste SAA (SWMU 20). When full, the facility moved the bin to the Former Western Outdoor CSA (SWMU 21) for storage. Dobrow Services, Inc. (Dobrow), of Muncie, Indiana, periodically picked up this waste for recycling.

Nonhazardous oil-soaked rags were generated from cleaning floor drippings of transmission oil from the cutting machines located in the former metal stamping area. The oil was water soluble. According to a facility representative, the oil that dripped on the floor was removed with dry rags and the oil-soaked rags were stored in a 3-cubic-yard steel dumpster in the Former Northern Outdoor CSA (SWMU 22). Information on the rate of waste generation is not available. The waste was picked up by Waste Management, Inc., of Muncie, Indiana, for disposal.

2.4

HISTORY OF DOCUMENTED RELEASES

This section discusses the history of documented releases to surface water, air, and on-site soils at the facility. Several releases have been documented by various regulatory agencies at the Enginuity facility. These are described below.

The facility released chromium, zinc, and cyanide from the Abandoned WWTPs (SWMU 12) to an open ditch and to Halfway Creek in excess of its NPDES permit limits. In August 1982, representatives of the Stream Pollution Control Board of Indiana (SPCB) found that the facility was releasing zinc and chromium to Halfway Creek in excess of its NPDES permit limits (SPCB 1983). Information is not available on the sampling location. In April 1985, representatives of the Indiana State Board of Health (ISBH), now IDEM, sampled the facility's treated wastewater from SWMU 12 and found that the facility was releasing chromium, zinc, and cyanide to an open ditch and to Halfway Creek in violation of its NPDES permit (ISBH 1985a). The sources of the release were removed to off-site locations and all surfaces that came in contact with wastewater treatment processes were decontaminated by EPA during the 1989 CERCLA emergency removal action.

On October 19, 1988, TAT documented a release of waste acid (D002) from a 600-gallon Former Waste Acid Storage Tank (SWMU 5) (Weston-Sper 1989). Between 1 and 3 gallons of acid had leaked from the tank onto the floor. The spill occurred within 15 feet of a below-floor tank bearing cyanide solution in the northern Abandoned WWTP (SWMU 12). Cyanide and acids, when combined, can form hydrogen cyanide (HCN) gas, which is capable of killing humans at concentration levels as low as 50 ppm (Weston-Sper 1989). Because of this imminent danger, on October 20, 1988, EPA requested that Enginuity pump the waste acid from the 600-gallon Former Waste Storage Tank (SWMU 5) to several 55-gallon tanks. The 55-gallon drums of waste acid were stored on site in the Former Enclosed Waste Acid CSA (SWMU 6). Acid that had already spilled onto the concrete floor was neutralized with a basic solution and water before being flushed into the Abandoned Floor Drains (SWMU 11). During the CERCLA emergency removal action in 1989, EPA rinsed and decontaminated the entire floor of the electroplating area of the facility.

On October 19, 1988, TAT documented releases of waste cyanide solution (F007) from waste cyanide-bearing drums in the Former Drum Room CSA (SWMU 2) (Weston-Sper 1989).

Information on the number of leaky drums is not available. A release to on-site soils was documented and addressed during the 1989 CERCLA emergency removal action when EPA removed the entire wooden floor and the underlying 8 to 10 inches of visually contaminated soil. EPA described both the wooden floor and the excavated soil as "cyanide-saturated," and sent both to an off-site facility for incineration (EPA 1991). The newly exposed soil in the Former Drum Room CSA (SWMU 2) may have residual cyanide contamination because EPA excavated the upper 8 to 10 inches of soil on the basis of visual inspection, rather than analytical data on soil contaminant levels.

In April 1988, TAT detected a release of cyanide from the Former Cleaning Tank (SWMU 8) into the air (Weston-Sper 1989). A Draeger tube detected 2 ppm HCN gas in the atmosphere above SWMU 8, which contained a solution with 8.07 percent cyanide. The HCN gas was apparently generated from the reaction between sodium cyanide in SWMU 7 and possibly muriatic acid in the atmosphere. Because the HCN concentration of 2 ppm is considerably lower than the 10 ppm exposure limit, set by National Institute for Occupational Safety and Health (NIOSH), it is unlikely that the cyanide release at the Enginuity facility impacted human health (NIOSH 1985).

2.5 REGULATORY HISTORY

Enginuity is currently regulated as a treatment, storage, or disposal (TSD) facility. All of the facility's hazardous waste storage and treatment units have either been abandoned on site or removed to off-site locations; however, the facility has not undergone RCRA closure at its regulated units.

The facility submitted its first notification of hazardous waste activity to EPA on August 15, 1980 (Albany Plating 1980b). The notification identified the facility as a generator of and storage facility for F006, F007, and P121 RCRA-listed wastes.

The facility submitted a RCRA Part A permit application to EPA on November 18, 1980. This application specified process codes for container storage (S01), referring to the Former Enclosed CSA (SWMU 1); storage in a tank (S02), referring to the Former Cleaning Tank (SWMU 8); and the treatment of hazardous wastewater, referring to the Abandoned WWTPs (SWMU 12). This application listed F006 and F007 waste codes. The application did not use consistent process codes for its wastes. Part III of the application indicated that the facility treated hazardous wastes in tanks

(process code T01) but Part IV stated that the facility only stored hazardous wastes in containers (process code S01) and tanks (process code S02) (Albany Plating 1980a). EPA asked the facility to correct the discrepancies in the application on two occasions, October 31, 1981, and September 29, 1983, without success (EPA 1981 and 1983). The 1980 Part A permit application also stated that 7,000 gallons of F007 RCRA-listed waste was left on site by McCormick Brothers, the facility's previous owner (Albany Plating 1980a).

In the Part A permit application, the facility identified only about 60 percent of the electroplating area which contained its three RCRA-regulated units (see Figure 2). However, documents available to PRC indicate that the facility also had RCRA-regulated units outside the area it had identified in the Part A permit application (IDEM 1987a and Weston-Sper 1989). These documents also reveal that in addition to the three RCRA-regulated units (SWMUs 1, 8, and 12) identified in the Part A permit application, the facility also had six additional RCRA-regulated units on site which stored hazardous wastes for more than 90 days. These units are as follows: Former Drum Room CSA (SWMU 2); Former Lacquer Room CSA (SWMU 3); Former Waste Acid Storage Tank (SWMU 5); Former Enclosed Waste Acid CSA (SWMU 6); Former Flocculent Storage Tank (SWMU 7); and Abandoned Spill-Control UST (SWMU 15). The nine RCRA-regulated units have operated during different time periods between the effective date of the regulations in 1980 and 1989. None of these SWMUs has undergone RCRA closure.

In August 1982, SPCB representatives inspected the facility and sampled facility wastewater. Analysis of the samples indicated that the facility was releasing zinc- and chromium-contaminated electroplating wastewater to Halfway Creek in violation of its NPDES permit (SPCB 1983). As a result of this finding, SPCB adopted a Consent Decree and issued a Final Order to Enginuity in November 1983 (Cause No. B-859) (SPCB 1983). The document ordered the facility to do the following: (1) refrain from conducting any plating operations at the site, (2) dispose of hazardous wastes from the site, (3) obtain a valid NPDES permit, and (4) pay a specified monetary civil penalty (SPCB 1983). In July 1986, SPCB also issued a Consent Decree to D&H to remove hazardous wastes from the site (Cause No. B-973) (IDEM 1987a).

In August 1985, ISBH notified Enginuity's president, Dennis J. McCarthy that Enginuity must submit a closure plan in order to properly close its RCRA-regulated units without specifying which units

(ISBH 1985b). In the notification, ISBH also asked Enginuity to amend its Part A permit application to reflect the change in operator from Albany Plating to D&H and the change in owner from KDM to Enginuity. According to the information available to PRC, the facility did not respond to ISBH's request.

In March 1986, a court injunction stopped the facility's electroplating operation because the facility was not in compliance with RCRA and NPDES permit requirements (IDEM 1987a). Since that time, plating has not been conducted at the facility.

In January 1987 and again in March 1987, a representative of IDEM conducted RCRA compliance inspections at the facility. Both inspections revealed a total of 26 violations pertaining mainly to waste characterization, inspection records, training programs, submittal of annual reports, proper labeling practices, operating records, closure plans, arrangements with local authorities, condition of waste containers, emergency equipment, and notification to new owner or operator of the requirements of applicable Indiana Administrative Codes. The inspections also revealed that hazardous waste had been stored at this facility since before 1980, and additional hazardous waste had been added to the accumulation by several different owners and operators. The facility lacked all of the required records, emergency equipment, and management requirements necessary to operate. Drums of hazardous waste were stored uncovered and many had deteriorated, releasing material. Based on the large number and types of violations, the IDEM inspector recommended that in addition to issuing a Notice of Violation (NOV), the facility not be allowed to start operation or generate additional hazardous waste until compliance is achieved with minimum operating requirements (IDEM 1987a).

In August 1987, pursuant to the January and March 1987 inspections, IDEM issued an NOV to Enginuity and offered the facility an opportunity to enter into an Agreed Order. The Agreed Order required actions to correct the violations and required the payment of a civil penalty (IDEM 1987b). Enginuity did not enter into the Agreed Order.

In November 1987, IDEM issued Enginuity an Order of the Commissioner to Enginuity that called for a cessation of violations, submittal of a closure plan, and the payment of \$52,350 in civil penalties

(IDEM 1987c). Enginuity did not request an administrative review or petition for a stay of effectiveness for the order.

In April 1988, IDEM requested that the State of Indiana Attorney General file a civil court action against Enginuity to enforce the Order of the Commissioner (IDEM 1988).

In October 1988, EPA contracted Weston-Sper of Chicago, Illinois, to conduct a site assessment (SA) at the Enginuity facility through TAT. TAT conducted the SA on October 19 and 20, 1988, and submitted a report to EPA in January 1989 (Weston-Sper 1989). During the SA, TAT documented the presence of 40 drums of cyanide waste and several drums and tanks of waste lacquer inside a small room in the plating building. Adjacent to this room was a 5500-gallon open-top tank containing cyanide solution with a pH of 11. A Draeger tube detected HCN gas at 2 ppm above the tank. In the main plating room a below-floor open-top tank contained about 2,700 gallons of suspected cyanide solution. Dennis J. McCarthy, president of Enginuity, reported that another below-floor tank contained about 2,700 gallons of noncyanide waste liquid. Between 1 and 3 gallons of acid had leaked onto the floor from a tank covered with a piece of plywood. The tank was almost located directly below several large holes in the roof of the building. In addition, an open tank in the main plating room contained 2,000 gallons of cyanide metal flocculent and about 12 open tanks contained varying volumes of liquids with pH values ranging from 6 to 12. A laboratory facility located in the electroplating area, contained over 50 chemical reagent bottles of varying volumes. In addition, an underground railroad tank car containing an estimated 2,000 to 5,000 gallons of oil potentially contaminated with PCBs was found outside GBC's operations near a loading dock (Weston-Sper 1989).

On October 20, 1988, the second day of the SA, a leaking acid tank near a below-ground cyanide solution tank posed an immediate threat to human health. Because the acid could react with the cyanide to form a lethal gas, EPA asked Enginuity to contain the acid. Under the direction and assistance of EPA, Enginuity pumped approximately 600 gallons of acid out of a leaking tank into drums for containment. Acid already spilled onto the concrete floor was neutralized with a basic solution and water. During containment of the acid, 40 residences were evacuated by the fire department as a precautionary measure.

In 1988, EPA issued a CERCLA Section 106 Unilateral Administrative Order (UAO) to those identified as potentially responsible parties (PRP) (IDEM no date). Information regarding parties issued UAOs is not available.

In January 1989, based on its SA in October 1988, TAT presented EPA with a removal action plan (RAP) for the facility's wastes. A copy of the RAP is included in Attachment A. TAT recommended that a removal action be undertaken by the responsible party (RP) or, if the RP is unable or unwilling to mitigate the threats of release, EPA should conduct an emergency removal action under the authority of the Superfund Amendments and Reauthorization Act (SARA) and CERCLA. The RAP proposed a schedule and a course of action for handling all hazardous wastes and hazardous constituents stored at the facility (Weston-Sper 1989).

In May 1989, EPA, in consultation with IDEM, approved funds for the cleanup because the potential of the PRPs to undertake the cleanup at the facility was perceived as poor (EPA 1991).

On June 19, 1989, the CERCLA emergency removal action began at the Enginuity facility. The removal was conducted by Zone III Emergency Response Cleanup Services (ERCS) contractor, Maecorp, Inc. (Maecorp), of Grand Rapids, Michigan. A copy of the CERCLA emergency removal action report is included in Attachment B. The CERCLA emergency response action at the Enginuity facility was completed on June 11, 1990. The total cost of this emergency response action was \$572,554.67 (EPA 1991). With the exception of the removal of two drums of decontaminated PPE, on June 11, 1990, all other emergency response action at the facility was completed in 1989. EPA does not plan to conduct additional CERCLA removal actions at the facility at this time (PRC 1993b).

According to a facility representative, EPA is currently in litigation with Enginuity for cost recovery. EPA has placed a lien on Enginuity's assets for \$558,000 (PRC 1993a).

The facility, under the operation of Albany Plating, held NPDES permit No. IN 0051462 to discharge treated wastewaters at Outfall No. 001, located about 170 feet west of the junction of Elm Street and Manor Avenue (see Figure 2). The NPDES permit expired in June 1981 and was not renewed by the facility. D&H obtained NPDES permit No. IN 0048640 for Outfall No. 001 in November 1983; the permit expired on October 31, 1988. The permit called for effluent limits on the following

parameters: total suspended solids (TSS), oil and grease, zinc, total chromium, hexavalent chromium, cyanide, barium, ammonia, and pH. The facility was inspected for NPDES compliance in 1982 and 1985. In the 1982 inspection, the facility was cited for violating effluent limits of zinc and chromium (SPCB 1983). In the 1985 inspection, the facility was cited for violating effluent limits of TSS, oil and grease, zinc, hexavalent chromium, and cyanide (ISBH 1985a).

The facility never had air permits for its on-site operations.

2.6 ENVIRONMENTAL SETTING

This section describes the climate; flood plain and surface water; geology and soils; and groundwater in the vicinity of the facility.

2.6.1 Climate

The climate in Delaware County is temperate. The average daily temperature is 52 °F. The lowest average daily temperature is 29 °F in January. The highest average daily temperature is 74 °F in July (USDA 1972).

The total annual precipitation for the county is 39.7 inches (USDA 1972). The mean annual lake evaporation for the area is 39 inches (PRC 1993c). The maximum 1-year, 24-hour rainfall is 2.5 inches (PRC 1993c).

The prevailing winds are generally from the southwest. The mean annual wind speed is 10 miles per hour (PRC 1993c).

2.6.2 Flood Plain and Surface Water

The Engenuity facility is not located in a 100-year flood plain (FEMA 1979).

The nearest wetland, about 15 acres in size, is located 0.2 mile southeast of the facility (NWI 1989).

The nearest surface water body, Halfway Creek, is located about 1,500 feet west (downstream) of the facility and is used for recreational purposes. Halfway Creek flows toward the southwest and merges into the Mississinewa River, about 2,500 feet southwest of the facility. The Mississinewa River merges into the Wabash River.

The facility is connected with the City of Albany sewer system. The surface runoff from the facility collects in a catch basin and then gets channeled through a 15-inch subsurface vitrified tile pipe to the facility's NPDES-permitted Outfall 001 where it empties into a ditch and flows toward the southwest into Halfway Creek.

2.6.3 Geology and Soils

The Enginuity facility is underlain by Pleistocene-aged unconsolidated glacial deposits and Silurian-aged dolomitic limestone bedrock. The parent materials from which the soils of Delaware County are derived consist of glacial till and of outwash gravel and sand of Pleistocene age and of alluvial deposits along streams (USDA 1972).

The Pleistocene-aged unconsolidated glacial deposits in Delaware and adjoining Cass Counties range in thickness from less than 1 foot to 300 feet (Gillies 1981). These deposits consist of clay, silt, sand, gravel, and peat. These were deposited by ice, water, and wind during the Pleistocene Ice Age and by water, wind, and mass wasting of slopes following the Ice Age. These materials were deposited on an eroded limestone bedrock surface. Data from 22 boreholes located within 2 miles of the facility show that the unconsolidated deposits range in thickness from 11 to 150 feet. One borehole, located about 2,000 feet northeast of the facility, shows the bedrock at a depth of 68 feet. The unconsolidated material in this borehole consists of a 20-foot clay layer at the surface which is underlain, successively, by a 25-foot sand layer and a 23-foot clay layer (IDNR 1993).

The bedrock under the facility is dolomitic limestone. It is near the northern end of the Cincinnati arch. The bedrock dips westerly from almost no dip at all across the broad top of the north end to a dip of 30 feet per mile in the southwest. The limestone ranges in thickness from 50 to more than 200 feet (USDA 1972). Rapid changes in the thickness of the overlying unconsolidated glacial deposits indicate the presence of bedrock valleys in the area (IDNR 1993).

2.6.4 Groundwater

Delaware County and surrounding counties are underlain by a glacial drift aquifer and a bedrock aquifer. A relatively impermeable layer of glacial till and silt near the land surface limits groundwater recharge. Underlying this till is a layer of glacial drift ranging in thickness from less than 1 foot to 300 feet. Within the drift, the principal aquifer consists of sand and gravel about 80 feet thick and is utilized for domestic and industrial use (Gillies 1981).

The bedrock aquifer is made of dolomitic limestone that underlies the entire Delaware County and surrounding counties (IDNR 1982). The upper 200 feet of bedrock is considered the bedrock aquifer system. Porosity and permeability in the carbonate bedrock are generally secondary and are caused by solution-widening of joints, bedding planes, and fractures. Because solution activity tends to decrease with depth, the opportunities for finding producing zones decrease with depth. The bedrock system is confined by the till above. It is generally a good aquifer capable of supplying water for domestic, municipal, and limited industrial needs (IDNR 1982).

The top of the bedrock aquifer is at a depth of less than 40 feet below the land surface in Albany (Gillies 1981). According to a facility representative, groundwater in Albany is about 12 feet below the land surface. Based on the observations on the excavation of two USTs at the facility during the 1989 CERCLA emergency removal action, EPA estimates the depth to groundwater at the facility to be about 10 feet (PRC 1993d). The low-permeability soil under the Enginuity facility may cause seasonally high perched water tables. The aquifer is protected by a clay or clay-rich layer that underlies the facility (IDEM 1989). Well logs suggest that the groundwater near the facility flows in a westerly direction (IDNR 1993).

2.7 RECEPTORS

The Enginuity facility is located in a residential area near the southeastern limits of the City of Albany, Indiana. Albany has a population of about 2,500. The facility is bordered on the north, east, and west by residences, and on the south by a warehouse and farmlands. The nearest school is about 0.75 mile west of the facility. The nearest residence is about 100 feet east of the facility. The nearest surface water body, Halfway Creek, is located about 1,500 feet west of the facility. Halfway

Creek is used for recreational purposes (PRC 1993d). The City of Albany taps its drinking water from groundwater.

Sensitive environments are not located on site. The nearest sensitive environment is a 15-acre, temporary palustrine forested wetland, 0.2 mile southeast of the facility (NWI 1989).

Groundwater is used for human consumption and for agricultural purposes by the City of Albany.

The nearest groundwater well, owned by the City of Albany, **Non-responsive, well locations**

Groundwater is located about 12 feet below the ground surface.

Access to the facility is via State Highway 28. The facility is encompassed by a 7-foot barbed-wire fence. The facility is secure from the outside. Gates to the abandoned site are kept locked.

However, Sinflex and Grief Brothers employees have access to the abandoned electroplating area because some walls of this area were partly removed during the 1989 CERCLA emergency removal action.

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the 22 SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of documented releases, and PRC's observations. Figure 2 shows the SWMU locations.

The Former Cleaning Tank (SWMU 8) was a process tank. It became a SWMU because its contents were left behind by McCormick Brothers and the facility's new operator identified them as waste in its Part A permit application (Albany Plating 1980a). Likewise, the Former Pickling Tank (SWMU 9), the Former Stripping Tank (SWMU 10), the Abandoned Electroplating Laboratory (SWMU 13), and the Former Waste Lacquer UST (SWMU 14) either stored products or were process tanks, but they became SWMUs because their contents were disposed of as waste during the CERCLA emergency removal action in 1989. In addition, Former Decontamination Rinsate SAA (SWMU 17), Former Decontamination Rinsate Storage Area (SWMU 18), and Former Outdoor CSA (SWMU 19) were SWMUs that managed wastes generated only during the CERCLA emergency removal action in 1989.

SWMU 1

Former Enclosed CSA

Unit Description:

This unit was located in the electroplating building. The unit consisted of an approximately 30-foot by 12-foot area of concrete floor located against the western wall of the building. The facility identified this SWMU as a RCRA-regulated unit in its Part A permit application. The unit stored hazardous wastes in 55-gallon drums for more than 90 days. During the CERCLA emergency removal action in 1989, EPA removed all drums to an off-site facility for scrap metal.

Date of Startup:

This unit began operation in the 1930s.

Date of Closure:

This unit was abandoned in 1989 after a CERCLA emergency removal action at the site. This unit is not RCRA closed.

Wastes Managed: This unit managed waste cyanide solution (F007) and obsolete laboratory chemicals (D002, U103, and others).

Release Controls: This unit was inside a building that had brick walls, a concrete floor, and floor drains.

History of Documented Releases: No releases from this unit have been documented.

Observations: PRC noted some dark stains on the concrete floor that was covered by wood, metal, and paper debris.

SWMU 2 Former Drum Room CSA

Unit Description: This unit was located in the Drum Room of the electroplating area. The unit consisted of an approximately 50-foot by 12-foot wooden floor. The unit was surrounded by brick walls on three sides and a wooden wall on the fourth side. It had doors on the northern and southern walls. It stored hazardous wastes in 55-gallon drums for more than 90 days. During the CERCLA emergency removal action in 1989, EPA removed all drums to an off-site facility for disposal; dismantled the wooden floor and had the wooden boards incinerated at an off-site facility; and also removed the top 8 to 10 inches of the underlying soil to an off-site facility for incineration. At the time of the VSI, this unit was abandoned.

Date of Startup: This unit began operation in the 1930s.

Date of Closure: This unit was abandoned in 1989 after a CERCLA emergency removal action at the site. This unit is not RCRA closed.

Wastes Managed: This unit managed waste cyanide solution (F007), cyanide-bearing wastewater treatment sludge (F006 and F008), cyanide-contaminated wood (F007), and cyanide-contaminated soil (F007). The waste cyanide solution and the cyanide-bearing wastewater treatment sludge were generated and left on site by McCormick Brothers.

Release Controls: This unit was located inside a building. However, the building has had holes in the roof since at least 1987. It had no floor drains.

History of Documented Releases: Release of hazardous waste from corroded drums was documented in this CSA in October 1988. Information on the date and quantity of the release is not available. The released material was removed to an off-site facility for disposal during the CERCLA emergency removal action in 1989.

Observations: At the time of the VSI, all waste from this unit had been removed. PRC noted some brown stains on an uneven soil surface which now constitutes the floor of this unit. PRC also noted snow had fallen through holes in the roof of this unit and had accumulated on the floor (see Photograph No. 1).

SWMU 3 Former Lacquer Room CSA

Unit Description: This unit was located in the Lacquer Room of the electroplating area. The unit consisted of an approximately 50-foot by 12-foot concrete floor. The unit was surrounded by brick walls on all sides, and had doors on the northern and southern walls. It stored hazardous wastes in 55-gallon drums for more than 90 days. During the CERCLA emergency removal action in 1989, EPA removed all drums to an off-site facility for disposal. The facility also used part of this unit for applying lacquer to pre-plated shelves and racks.

Date of Startup: This unit began operation in the 1930s.

Date of Closure: This unit was abandoned in 1989 after a CERCLA emergency removal action at the site. This unit is not RCRA closed.

Wastes Managed: This unit managed waste lacquer (D001 and F005).

Release Controls: This unit was inside a building that had brick walls and a concrete floor. It had no floor drains.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, all waste from this unit had been removed. A 300-gallon process tank, which did not contain any waste during the 1989 CERCLA emergency removal action, was located at the eastern end of the this unit. PRC noted no signs of release during the VSI (see Photograph No. 2).

SWMU 4

Abandoned Concrete Loading Dock

Unit Description: This unit is located outside the western end of the electroplating building along Manor Avenue. It is about 80 feet by 30 feet in size and is about 5 feet above ground. This dock is a SWMU because drums with hazardous wastes were accumulated here by the facility (IDEM 1987a). This unit was also used as a staging area for loading hazardous wastes by the facility before 1978.

Date of Startup: This unit began operation in the 1930s.

Date of Closure: This unit was abandoned in 1989 after a CERCLA emergency removal action at the site.

Wastes Managed: This unit managed waste lacquer (D001 and F005); cyanide-bearing wastewater treatment sludge (F006 and F008); and cyanide and metal-bearing wastewater treatment flocculent (F006, F008, and D007).

Release Controls: This unit had no release controls in place.

History of Documented Releases: No releases from this unit have been documented.

Observations: PRC observed grayish and brownish stains throughout the unit. PRC also observed deep cracks in this unit (see Photograph No. 3).

SWMU 5 Former Waste Acid Storage Tank

Unit Description: This unit was a 600-gallon open-top steel tank where the facility stored waste acid that was generated in the Former Pickling Tank (SWMU 9). The facility reused this waste acid to adjust the pH of wastewater in the Abandoned WWTPs (SWMU 12). Some of this waste was also shipped off site for treatment and disposal during the CERCLA emergency removal action in 1989. This unit was located on a concrete floor in the electroplating area of the facility. The facility kept the top of this unit covered with plywood.

Date of Startup: This unit began operation in 1979.

Date of Closure: This unit was disabled in 1988 when the facility drained its content after detecting a release. It was removed off site for scrap metal during the CERCLA emergency removal action in 1989. This unit is not RCRA closed.

Wastes Managed: This unit managed waste acid (D002).

Release Controls: This unit had no release controls.

History of Documented Releases: An inspection by TAT on October 19, 1988, observed a spill of between 1 and 3 gallons of waste acid (D002) from this unit onto the concrete floor. The date of the release is not available. On October 20, 1988, the facility neutralized the spilled acid with basic solution and water, and flushed the spent solutions into floor drains.

Observations: At the time of the VSI, EPA had removed this unit to an off-site location for scrap metal. PRC noted that the location of this unit was strewn with paper and wooden debris (see Photograph No. 4).

SWMU 6 **Former Enclosed Waste Acid CSA**

Unit Description: This unit was located at the southeastern part of the electroplating area. The unit consisted of a 30-foot by 12-foot concrete floor located against the eastern wall of the building. This unit stored waste acid in 55-gallon drums for more than 90 days. The waste acid was drained from the Former Waste Acid Storage Tank (SWMU 5) in October 1988, after a release was detected from SWMU 5. This unit also stored one 55-gallon drum of spent chromic acid.

Date of Startup: This unit began operation in October 1988.

Date of Closure: This unit was abandoned in June 1989 after EPA removed waste acid from this unit during a CERCLA emergency removal action. This unit is not RCRA closed.

Wastes Managed: This unit managed waste acid (D002).

Release Controls:	This unit was inside a building that had brick walls, a concrete floor, and floor drains.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	PRC noted some dark stains on the concrete floor that were covered by wood, metal, and paper debris (see Photograph No. 5).
SWMU 7	Former Flocculent Storage Tank
Unit Description:	This unit was a 3000-gallon aboveground steel tank in the electroplating area. It was located on floor level at the northeastern corner of the Abandoned WWTPs (SWMU 12). It was emptied, decontaminated, and removed to an off-site facility for scrap metal during the CERCLA emergency removal action in 1989.
Date of Startup:	The date this unit began operation is not available.
Date of Closure:	This unit was removed to an off-site location for scrap metal in 1989 during a CERCLA emergency removal action. This unit is not RCRA closed.
Wastes Managed:	This unit managed cyanide and metal-bearing wastewater treatment flocculent (F006, F008, and D007) generated by the facility's Abandoned WWTPs (SWMU 12).
Release Controls:	This unit was inside a building that had brick walls, a concrete floor, and floor drains.
History of Documented Releases:	No releases from this unit have been documented.

Observations: At the time of the VSI, EPA had moved this unit to an off-site location for scrap metal. PRC did not note any signs of release at the location of this unit.

SWMU 8 Former Cleaning Tank

Unit Description: This unit was a 5500-gallon open-top steel tank which was located on a concrete floor in the central part of the electroplating area. It stored caustic cyanide bath. In 1980, the facility identified this unit as a RCRA-regulated unit in its Part A permit application (Albany Plating 1980a). According to a facility representative, this unit was a process tank. It was used by McCormick Brothers to conduct the electroplating process and it was taken out of service when McCormick Brothers ceased operating the facility in 1978. This tank, along with the caustic cyanide bath, was relocated to another point within the electroplating area sometime after 1978. This unit became a SWMU because its contents were removed as waste during the 1989 CERCLA emergency removal action. In 1988, the TAT found that this bath had a pH of 11, a Draeger tube reading of 2 ppm HCN, and a cyanide content of 8.07 percent.

Date of Startup: This unit began operation in 1980.

Date of Closure: This unit was removed to an off-site location for scrap metal in 1989 during the CERCLA emergency removal action. This unit is not RCRA closed.

Wastes Managed: This unit managed waste cyanide solution (F007).

Release Controls: This unit was located inside a building that had brick walls, a concrete floor, and floor drains.

History of Documented Releases: An inspection by TAT detected a Draeger tube reading of 2 ppm of HCN gas in the atmosphere directly above this unit in October 1988. The contents of this SWMU were removed in 1989.

Observations: At the time of the VSI, EPA had moved this unit to an off-site location for scrap metal. PRC noted that the location of this unit was covered with paper, metal, and wooden debris (see Photograph No. 6).

SWMU 9 Former Pickling Tank

Unit Description: This unit was a 600-gallon aboveground steel tank located inside the electroplating area. It contained acidic solution that was used for pickling shelves and racks in the electroplating process. It became a SWMU because the facility abandoned it on site in 1986, with 600 gallons of acidic solution which was removed to an off-site location as waste.

Date of Startup: This unit began operation in 1986.

Date of Closure: This unit was removed to an off-site location for scrap metal in 1989 during a CERCLA emergency removal action.

Wastes Managed: This unit managed waste acid (D002).

Release Controls: This unit was located inside a building that had brick walls, a concrete floor, and floor drains.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, EPA had removed this unit to an off-site location for scrap metal. PRC did not note any signs of release at the location of this unit.

SWMU 10 Former Stripping Tank

Unit Description: This unit was a 1200-gallon steel tank inside the electroplating area. It was a part of the facility's electroplating system and contained caustic cleaning solution in which shelves and racks were power stripped prior to electroplating. This tank became a SWMU because the facility abandoned this unit on site in 1986 and the caustic cleaning solution was removed as waste.

Date of Startup: The unit began operation in 1986.

Date of Closure: This unit was removed to an off-site location for scrap metal during a CERCLA emergency removal action.

Wastes Managed: This unit managed caustic stripping bath (D002).

Release Controls: This unit was located inside a building that had brick walls, a concrete floor, and floor drains.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, EPA had moved this unit to an off-site location for scrap metal. PRC did not note any signs of release at the location of this unit.

SWMU 11**Abandoned Floor Drains****Unit Description:**

This unit is located throughout the electroplating area of the facility. The drains are about 1 foot wide and 1 foot deep. They have a metal liner. According to a facility representative, when in operation, these drains had perforated metal covers. The floor of the facility slopes toward this unit. When in operation, it routed all spills and drippings from facility operations to the Abandoned Spill-Control UST (SWMU 15) located to the south of the electroplating building.

Date of Startup:

This unit began operation in the 1930s.

Date of Closure:

This unit was abandoned in 1989 after a CERCLA emergency removal action.

Wastes Managed:

This unit managed waste cyanide solution (F007); caustic stripping bath (D002); cyanide-bearing wastewater treatment sludge (F006 and F008); cyanide and metal-bearing wastewater treatment sludge (F006, F008, and D007); metal-bearing wastewater treatment sludge (F006 and D007); waste acid (D002); and decontamination rinsate (D007 and F007).

Release Controls:

This unit had a metal liner.

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations:

PRC observed some waste material of light-brown color at the bottom of this unit. The waste was partially covered with wooden and paper debris (see Photograph No. 7).

SWMU 12

Abandoned WWTPs

Unit Description:

This unit consists of two WWTPs, the southern and the northern WWTPs, in which the facility treated process wastewater and stored hazardous wastes. Both of these plants are located below floor level inside a 33-foot by 27-foot concrete floored room at the southwestern part of the electroplating area. The two WWTPs are not separated by a wall or dike (PRC 1993a). Each of these WWTPs consisted of a collection tank, a treatment tank, a settling tank, and two reservoir tanks. In the collection tank, the pH of the incoming process wastewater was lowered in order to keep metals in the wastewater. In the treatment tank, metals were separated from the wastewater and allowed to settle. McCormick Brothers separated the metals from wastewater by adding flocculents to the wastewater, while Enginuity and D&H separated the metals from wastewater by raising the pH of the wastewater by adding calcium hydroxide to it. McCormick Brothers also separated cyanide from the wastewater in an auxiliary tank located next to the treatment tank. In the settling tank, the sludge settled to the bottom. The pH of the wastewater near the top of the tank was adjusted and discharged. The two reservoir tanks contained calcium hydroxide and muriatic acid used for pH adjustment. The discharged water was routed by a steel pipe to a catch basin located at the southwest corner of the facility where it flowed to a subsurface vitrified tile pipe and finally discharged to Halfway Creek. The facility had an NPDES permit for this discharge. During the CERCLA emergency response action of 1989, the collection tank, which is made of concrete, was abandoned on site and the remaining four tanks, which were made of steel, were removed off site for scrap metal.

Date of Startup:

The northern WWTP began operation in the early 1970s and the southern WWTP began operation in 1978.

Date of Closure: Both plants of this unit were abandoned in 1989 after all steel tanks were removed off site during the CERCLA emergency removal action. Prior to this, the northern WWTP had treated wastewater until 1978, but continued to store hazardous waste until 1989; the southern WWTP had treated wastewater until 1986 but continued to store hazard waste until 1989. This unit is not RCRA closed.

Wastes Managed: This unit managed cyanide-bearing wastewater (F007), cyanide-bearing wastewater treatment sludge (F006 and F008), cyanide and metal-bearing wastewater treatment flocculent (F006, F008, and D007), metal-bearing wastewater treatment sludge (F006 and D007); and waste acid (D002).

Release Controls: This unit is located inside a building that has brick walls, a concrete floor, and floor drains.

History of Documented Releases: A release of zinc and chromium to surface water, in violation of the facility's NPDES permit, was documented in 1982 and another release of zinc, chromium, and cyanide was documented in 1985. The sources of the zinc, chromium, and cyanide release were removed to off-site locations and all surfaces that came in contact with wastewater treatment processes were decontaminated by EPA during the 1989 CERCLA emergency removal action.

Observations: At the time of the VSI, EPA had removed all steel tanks off site for scrap metal. PRC noted cardboard and wooden debris around the manhole to the abandoned concrete-construction collection tank (see Photograph No. 8).

SWMU 13

Abandoned Electroplating Laboratory

Unit Description:

In this unit the facility tested the quality of its products and supplies as part of its quality control program. This unit became a SWMU because the chemicals used in this laboratory were disposed of as waste during the 1989 CERCLA emergency response action. This unit was located in a 15-foot by 12-foot room at the west central part of the electroplating area. This room had a concrete floor, four wooden walls, and a set of wooden shelves, counters, and cabinets. This unit contained over 50 chemical reagent bottles of varying volumes.

Date of Startup:

This unit began operation in the 1930s.

Date of Closure:

All of the chemicals in this unit were removed in 1989 during the CERCLA emergency response action.

Wastes Managed:

This unit managed obsolete laboratory chemicals (D002, U103, and others). The names of all the chemicals used in this laboratory are not available.

Release Controls:

This unit is located inside a building that has brick walls, a concrete floor, and floor drains.

History of Documented Releases:

No releases from this unit have been documented.

Observations:

At the time of the VSI, this unit was empty. PRC noted that the wall paint had peeled off and the floor had some superficial stains. PRC did not note any cracks in the floor (see Photograph No. 9).

SWMU 14**Former Waste Lacquer UST****Unit Description:**

According to a facility representative, this unit was a 600-gallon steel UST which was located outside the lacquer room of the facility. It stored solvent-based virgin lacquer which was used for the lacquer coating process when McCormick Brothers operated the facility. According to a facility representative, this unit was not used by any operator after McCormick Brothers. This UST became a SWMU because the lacquer stored in it was removed off site as waste during the CERCLA emergency removal action in 1989. During the CERCLA emergency response action, EPA excavated this unit and backfilled the cavity with native soil.

Date of Startup:

This unit began operation in the 1930s.

Date of Closure:

This unit was excavated and removed off site for scrap metal in 1989 during a CERCLA emergency removal action.

Wastes Managed:

This unit managed waste lacquer (D001 and F005).

Release Controls:

This unit had no release controls.

**History of
Documented Releases:**

No releases from this unit have been documented. However, during its excavation in 1989, EPA noted holes up to 3 inches wide in this unit.

Observations:

At the time of the VSI, EPA had removed this unit off site for scrap metal. PRC noted that the removed location of this unit was covered with dry leaves and grass.

SWMU 15**Abandoned Spill-Control UST****Unit Description:**

This unit is a 10000-gallon fiberglass-lined concrete UST that was abandoned on site by EPA after the CERCLA emergency removal action in 1989. It is located to the south of Oak Street across from the manufacturing building. It stored floor drippings and spills from facility operations. Floor drippings and spills were channelized to this unit by a set of floor drains in the electroplating building. This unit was used only by McCormick Brothers. During the 1989 CERCLA emergency removal action, EPA removed about 600 gallons of cyanide plating solution and sludge (F007 and F008) out of this unit to an off-site location and abandoned the UST on site.

Date of Startup:

This unit began operation in the 1930s.

Date of Closure:

This unit was abandoned in June 1990 during the final stages of the CERCLA emergency removal action when EPA removed its contents to an off-site location and abandoned it on site. This unit is not RCRA closed.

Wastes Managed:

This unit managed waste cyanide solution (F007), caustic stripping bath (D002), cyanide-bearing wastewater treatment sludge (F006 and F008), cyanide and metal-bearing wastewater treatment flocculent (F006, F008, and D007), metal-bearing wastewater treatment sludge (F006 and D007), waste acid (D002) and decontamination rinsate (D007 and F007).

Release Controls:

This unit had no release controls.

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations: PRC noted dry leaves and grass at this unit. PRC did not note any signs of release (see Photograph No. 10).

SWMU 16 Former Underground Railroad Tank Car

Unit Description: This unit was a 20000-gallon steel railroad tank car buried outside GBC's cardboard manufacturing building. It stored waste fuel oil and PCB-bearing waste transformer oil mixture. According to a facility representative, the top of this unit was buried to a depth of about 2.5 feet. McCormick Brothers used it to store fuel oil for on-site boilers. In 1985, when D&H changed transformer oil on site, it added the waste PCB-bearing transformer oil to the virgin fuel oil that was already in it. The TAT sampled this waste in 1988 and the analysis revealed a PCB concentration of 4.75 ppm. During the CERCLA emergency removal action in 1989, this unit was drained and sent off site for scrap metal. The cavity of the removed UST was backfilled with native soil.

Date of Startup: The date this unit began operation is not available.

Date of Closure: This unit was excavated and removed off site for scrap metal in 1989 during a CERCLA emergency removal action.

Wastes Managed: This unit managed waste fuel oil and PCB-bearing waste transformer oil mixture (D001).

Release Controls: This unit had no release controls.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, EPA had moved this unit to an off-site location for scrap metal. PRC observed a gravel-covered surface at the location of this unit that had no signs of release (see Photograph No. 11).

SWMU 17

Former Decontamination Rinsate SAA

Unit Description: This unit consisted of an approximately 10-foot by 10-foot concrete floor inside the northern part of the electroplating building. In this unit, EPA accumulated rinsate, which was collected from the decontamination of tanks, equipment, and facility floors, in 1200-gallon PVC containers during the 1989 CERCLA emergency response action. When full, EPA moved these containers to the Former Decontamination Rinsate Storage Area (SWMU 18) located across Manor Avenue on the west side of the electroplating building.

Date of Startup: This unit began operation in June 1989.

Date of Closure: This unit was abandoned in September 1989 when the decontamination of tanks, equipment, and debris related to the CERCLA emergency removal action was completed.

Wastes Managed: This unit managed decontamination rinsate (F007 and D007) which was generated during the CERCLA emergency response action in 1989.

Release Controls: This unit was located inside a building that had brick walls, concrete floor, and floor drains.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, this unit did not store any waste. It was covered with wood, metal, and paper debris.

SWMU 18 **Former Decontamination Rinsate Storage Area**

Unit Description: This unit was an approximately 40-foot by 15-foot area of a larger asphalt covered parking lot. It was located along the west side of Manor Avenue to the west of the manufacturing building. In this area, the EPA contractor had parked a semi tanker trailer in which 1200-gallon PVC containers with decontamination rinsate were stored. These PVC containers were transferred periodically from the Former Decontamination Rinsate SAA (SWMU 17) during the CERCLA emergency removal action in 1989.

Date of Startup: This unit began operation in June 1989.

Date of Closure: This unit ceased operation in September 1989 when the decontamination of tanks, equipment, and debris related to the CERCLA emergency removal action was completed.

Wastes Managed: This unit managed decontamination rinsate (F007 and D007) during the CERCLA emergency response action.

Release Controls: This unit stored waste inside a semi tanker trailer which was constructed of metal and was fully enclosed.

History of Documented Releases: No releases from this unit have been documented.

Observations: PRC noted superficial cracks in the asphalt-covered surface of this unit. PRC did not note any signs of release at this unit.

SWMU 19**Former Outdoor CSA****Unit Description:**

This unit was an approximately 15-foot by 8-foot asphalt-covered area on the east shoulder of Manor Avenue. It was located outside the west end of the electroplating building. In this area, EPA had placed a 15-foot by 8-foot metallic roll-off box where it stored nonhazardous waste during the CERCLA emergency response action of 1989.

Date of Startup:

This unit began operation in June 1989.

Date of Closure:

This unit was abandoned in December 1989, after the removal of crushed drums and used PPE during the CERCLA emergency removal action.

Wastes Managed:

This unit managed crushed metal drums, waste PVC coveralls, and used PPEs (all nonhazardous) during the 1989 CERCLA emergency response action.

Release Controls:

This unit stored waste in a 15-foot by 8-foot roll-off box which was constructed of metal and had a cover.

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations:

PRC noted some superficial cracks in the asphalt-covered surface of this unit. PRC did not note any signs of release at this unit.

SWMU 20**Former Nonhazardous Waste Accumulation Area****Unit Description:**

This unit was located in an enclosed area on an approximately 10-foot by 10-foot concrete floor. This unit was at the center of a larger concrete floor where the facility operated its metal stamping work

until 1989. Within this unit the facility accumulated scrap steel comprising off-specification products and metal trimmings in a 2-cubic-yard steel bin.

Date of Startup: This unit began operation in 1984.

Date of Closure: This unit ceased operation in 1989.

Wastes Managed: This unit managed scrap steel (nonhazardous).

Release Controls: This unit was located on a concrete floor inside a brick building.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, the former stamping area, where this unit was located, was leased to GBC who was using it for storing products. PRC did not note any deep cracks or signs of release in the concrete floor where this unit was formerly located (see Photograph No. 12).

SWMU 21 Former Western Outdoor CSA

Unit Description: This unit consisted of an approximately 20-foot by 20-foot gravel area outside the western end of the electroplating building. This unit was bordered by a garage door on the north, a 5-foot high concrete platform on the east, the Abandoned Concrete Loading Dock (SWMU 4) on the south, and an 8-foot steel gate on the west. This unit stored scrap steel (nonhazardous) in a 3-cubic-yard steel bin.

Date of Startup: This unit began operation in 1984.

Date of Closure: This unit was abandoned in 1989 after the CERCLA emergency removal action.

Wastes Managed: This unit managed scrap steel (nonhazardous).

Release Controls: This unit had no release controls.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, this unit was abandoned. The gravel area was covered with debris and dry grass. PRC did not note any signs of release at this unit (see Photograph No. 3).

SWMU 22 Former Northern Outdoor CSA

Unit Description: This unit consisted of an approximately 20-foot by 20-foot gravel area outside the northern end of the electroplating building. This unit was bordered by brick walls on the north and south, an electric transformer on the east, and a 10-foot high steel gate on the west. This unit stored nonhazardous oil-soaked rags in a 3-cubic-yard steel dumpster.

Date of Startup: This unit began operation in 1984.

Date of Closure: This unit ceased operation in 1989.

Wastes Managed: This unit managed nonhazardous oil-soaked rags.

Release Controls: This unit had no release controls.

History of Documented Releases: No releases from this unit have been documented.

Observations:

At the time of the VSI, this unit was leased to GBC. PRC did not note any cracks or signs of release at this unit (see Photograph No. 13).

4.0 AREAS OF CONCERN

PRC identified no AOCs during the PA/VSI.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified 22 SWMUs and no AOCs at the Enginuity facility. Background information on the facility's location; operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, history of documented releases, and observed condition, is presented in Section 3.0. Following are PRC's conclusions and recommendations for each SWMU. Table 3, located at the end of this section, summarizes the SWMUs at the facility and the recommended further actions.

SWMU 1 Former Enclosed CSA

Conclusions: This unit was located indoors on a concrete floor. It managed waste cyanide solution (F007) and obsolete laboratory chemicals (D002, U103, and others) for more than 90 days. The facility identified this SWMU as a RCRA-regulated storage unit in its Part A permit application (process code S01). This unit was abandoned in 1989 after a CERCLA emergency removal action, but has not undergone RCRA closure. During this removal action, EPA removed all wastes to an off-site location for disposal. No documented releases have occurred from this unit. The potential for release to all environmental media is low.

Recommendations: PRC recommends that this unit be RCRA closed.

SWMU 2 Former Drum Room CSA

Conclusions: This unit was located indoors on a wooden floor. The roof of this unit has had holes in it since at least 1987. This unit managed hazardous waste in 55-gallon drums. This SWMU was a RCRA-regulated unit because it stored hazardous wastes for more than 90 days. This unit was abandoned in 1989 after a CERCLA emergency removal action was carried out at the facility.

During the removal action, EPA found that a release to on-site soils had occurred. EPA found the wooden floor and the underlying 8 to 10 inches of soil contaminated with cyanide solution and removed both to an off-site location. After this removal, the newly exposed soil in this unit has not been tested for cyanide contamination. The potential for past release to surface water and groundwater is low to moderate because this unit has had holes in the roof and rainwater might have come in contact with the contaminated floor and impacted both the surface runoff and the in-ground seepage. The potential for past release to air is low because it is unlikely that the cyanide released into the on-site soils will come in contact with any acids in the atmosphere to generate levels of HCN gas high enough to impact the air.

Recommendations: PRC recommends that this unit be RCRA closed. PRC also recommends that subsurface soil from the excavated floor of this unit be analyzed for cyanide; if elevated cyanide concentrations are detected in the soil samples, collect water samples from NPDES Outfall No. 001 and groundwater samples from areas downgradient of SWMU 2 for cyanide analysis.

SWMU 3 Former Lacquer Room CSA

Conclusions: This unit was located indoors on a concrete floor. It managed hazardous waste in 55-gallon drums. This SWMU was a RCRA-regulated unit because it stored hazardous wastes for more than 90 days. This unit was abandoned in 1989, after a CERCLA emergency removal action. During this removal action, EPA removed all wastes to an off-site location for disposal. No documented releases have occurred from this unit. The potential for release to all environmental media is low.

Recommendations: PRC recommends that this unit be RCRA closed.

RELEASED
DATE 9/29/99
RIN #
INITIALS UV

SWMU 4**Abandoned Concrete Loading Dock****Conclusions:**

This unit was abandoned in 1989 after a CERCLA emergency removal action. This unit is an 80-foot by 30-foot open concrete dock where the facility accumulated hazardous wastes in 55-gallon drums. This unit has no release controls. No documented releases have occurred from this unit. The potential for past release to surface water is low to moderate because the runoff from this unit empties into a storm sewer located about 150 feet south of it. The potential for past release to groundwater and on-site soils is also low to moderate because this unit has deep cracks through which contaminants could have migrated into the ground. The potential for past release to air is low because the unit was abandoned in 1989 and the likelihood of volatile constituents still being present in amounts that would impact the air is small.

Recommendations:

PRC recommends that on-site subsurface soil samples near the unit be analyzed for VOCs, cyanide, chromium, and zinc. If elevated VOC, cyanide, chromium, and zinc concentrations are detected in the on-site soils, groundwater from an area downgradient of the unit should be collected and analyzed for VOCs, cyanide, chromium, and zinc.

SWMU 5**Former Waste Acid Storage Tank****Conclusions:**

This unit was a 600-gallon aboveground steel tank which was stationed indoors on a concrete floor. It managed waste acid (D002). This SWMU was a RCRA-regulated unit because it stored hazardous wastes for more than 90 days. The tank was removed off site for scrap metal during the CERCLA emergency removal action in 1989. A release between 1 and 3 gallons of waste acid was documented during an SA in October 1988. The release was neutralized with a basic solution and water. Because the release occurred on a concrete floor that had no deep cracks, and the released material had no volatile constituents, it is unlikely that the release impacted any environmental media. The potential for release to all environmental media is low.

RELEASED
DATE 9/29/99
RIN #
INITIALS mv

Recommendations: PRC recommends that this unit be RCRA closed.

SWMU 6 Former Enclosed Waste Acid CSA

Conclusions: This unit was located in the electroplating area. It consisted of a 30-foot by 12-foot concrete floor. It managed waste acid (D002) in 55-gallon drums for more than 90 days. This waste was drained from the Former Waste Acid Storage Tank (SWMU 5) in October 1988. No documented releases have occurred from this unit. The potential for release to all environmental media is low.

Recommendations: PRC recommends that this unit be RCRA closed.

SWMU 7 Former Flocculent Storage Tank

Conclusions: This unit was a 3000-gallon aboveground steel tank which was stationed indoors on a concrete floor. It managed cyanide and metal-bearing wastewater treatment flocculent (F006, F008, and D007). It was decontaminated and removed off site for scrap metal during the CERCLA emergency removal action in 1989. No documented releases have occurred from this unit. The potential for past release to surface water, groundwater, and on-site soils is low because the unit was located indoors on a concrete floor which has floor drains. The TAT did not find any releases from this unit during the SA in October 1988. The potential for past release to air is also low because the waste this unit managed did not have volatile constituents.

Recommendations: PRC recommends that this unit be RCRA closed.

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DATE 9/29/99
RIN #
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SWMU 8**Former Cleaning Tank****Conclusions:**

This unit was a 5500-gallon open-top steel tank which was located indoors on a concrete floor. This was a process tank and it was taken out of service when McCormick Brothers ceased operating the facility in 1978. It became a SWMU because its contents were disposed of as waste. The facility identified this tank as a RCRA-regulated storage unit (process code S02) and described its contents as waste in its 1980 Part A permit application. During the CERCLA emergency removal action in 1989, this unit was removed to an off-site location for scrap metal and its content was sent off site for treatment and disposal. One release from this unit was documented in October 1988 when a Draeger tube detected 2 ppm of HCN gas in the atmosphere above this unit. The unit was removed to an off-site location in 1989 and the likelihood of HCN gas still being present in amounts that would impact the air is small. The potential for past releases to on-site soils, surface water, and groundwater is low.

Recommendations:

PRC recommends that this unit be RCRA closed.

SWMU 9**Former Pickling Tank****Conclusions:**

This unit was a 600-gallon steel tank located indoors on a concrete floor. This was a process tank but it became a SWMU because the acid contained in this unit was disposed of as waste. During the CERCLA emergency removal action in 1989, this unit was removed to an off-site location for scrap metal and its content was sent to another facility for treatment and disposal. No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations:

PRC recommends no further action at this time.

RELEASED
DATE 9/19/99
RIN #
INITIALS WV

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SWMU 10**Former Stripping Tank****Conclusions:**

This unit was a 1200-gallon steel tank which was located indoors on a concrete floor. This was a process tank but it became a SWMU because the caustic cleaning solution contained in this unit was disposed of as waste. During the CERCLA emergency removal action in 1989, this unit was removed to an off-site location for scrap metal and its contents were sent to another facility for treatment and disposal. No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations:

PRC recommends no further action at this time.

SWMU 11**Abandoned Floor Drains****Conclusions:**

This unit is located throughout the electroplating area of the facility. This unit routed all spills and drippings from the electroplating part of the facility to the Abandoned Spill-Control UST (SWMU 15) located to the south of the electroplating building. This unit was abandoned in 1989 after the CERCLA emergency removal action. However, information available to PRC does not show that EPA removed wastes from this unit. At the time of the VSI, PRC observed some waste material of light-brown color at the bottom of this unit. The waste was partially covered with wooden and paper debris. No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations:

PRC recommends that all wastes from this unit be removed to authorized off-site facilities for further handling.

RELEASED
DATE 9/29/99
RIN #
INITIALS WV

ENFORCEMENT
CONFIDENTIAL

SWMU 12**Abandoned WWTPs****Conclusions:**

This unit treated the facility's process wastewaters. The facility identified this SWMU as a RCRA-regulated treatment unit in its Part A permit application (process code T01). It consists of two abandoned plants that are located in one room and these are referred to as the northern and southern plants in this report. The northern plant treated cyanide-bearing wastewaters from the early 1970s to 1978. The southern plant treated cyanide-free wastewaters between 1978 and 1986. The two plants also stored hazardous wastes until 1989. The facility discharged treated wastewaters into Halfway Creek for which it had an NPDES permit. During the CERCLA emergency removal action in 1989, all wastes were removed to off-site locations, tanks were removed for scrap metal, and the facility was abandoned. Releases of chromium and zinc from this unit into Halfway Creek were documented in 1982 and 1985 and a release of cyanide occurred in 1985. These releases violated the facility's NPDES permit limits. The potential for past release to on-site soils and groundwater is low to moderate because cyanide, chromium, and zinc-bearing wastewaters were released to an open ditch south of Elm Street and the contaminants could have percolated into the sediment and then to the groundwater. The potential for past release to air is low because the wastes this unit managed did not contain any volatile constituents.

Recommendations:

PRC recommends that this unit be RCRA closed. PRC also recommends that water and sediments from the open ditch downstream of NPDES Outfall No. 001 and from Halfway Creek be analyzed for cyanide, chromium, and zinc; if elevated cyanide, chromium, and zinc concentrations are detected in the water or sediments, groundwater from areas downgradient of the NPDES outfall be analyzed for cyanide, chromium, and zinc.

RELEASED
DATE 9/29/99
RIN #
INITIALS MM

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RELEASED
DATE 9/29/99
RIN #
INITIALS WV

ENFORCEMENT
CONFIDENTIAL

SWMU 13

Abandoned Electroplating Laboratory

Conclusions: This unit was located in a 15-foot by 12-foot room at the west central part of the electroplating area. In this laboratory the facility tested its product and supplies for quality control. It became a SWMU because over 50 chemical reagent bottles that were stored in this unit were disposed of as waste. This unit was abandoned after the CERCLA emergency response action in 1989. No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations: PRC recommends no further action at this time.

SWMU 14

Former Waste Lacquer UST

Conclusions: This unit was a 600-gallon underground steel tank which stored waste lacquer. It was located in the courtyard just outside the lacquer room of the facility. According to a facility representative, the virgin lacquer stored in this unit was used prior to 1978 by McCormick Brothers. During the CERCLA emergency response action of 1989, EPA disposed of the content of this unit off site as waste and removed the tank to an off-site location for scrap metal. No documented releases have occurred from this unit. However, EPA's former on-scene coordinator for the 1989 CERCLA emergency removal action told PRC that this unit had holes up to 3 inches in diameter (PRC 1993c). The potential for past releases to on-site soils and groundwater is moderate because at the time of excavation the unit had holes in it. In addition, the facility could not provide evidence to show that this unit was not leaking or had adequate secondary containment. The potential for past releases to surface water is low because any VOCs released into the soil would have to migrate upward and mingle with surface water, which appears unlikely. The potential for past releases to air is also low because the unit was removed in 1989 and the likelihood of any VOCs still being present in amounts that would impact the air is small.

RELEASED
DATE 9/29/99
RIN #
INITIALS UV

ENFORCEMENT
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Recommendations: PRC recommends that subsurface soil from the location of this unit be analyzed for VOCs; if elevated concentrations are detected in the subsurface soil, groundwater from areas downgradient of the unit should also be sampled for VOC analysis.

SWMU 15 Abandoned Spill-Control UST

Conclusions: This unit is a 10000-gallon fiberglass-lined UST made of concrete located to the south of Oak Street, across from the electroplating building. It stored hazardous wastes resulting from the spills and floor drippings in the facility's electroplating area. These spills and floor drippings were channeled to this unit through the Abandoned Floor Drains (SWMU 11). This SWMU was a RCRA-regulated unit because it stored hazardous wastes for more than 90 days. During the CERCLA emergency response action of 1989, EPA removed the wastes from this unit to an off-site location and abandoned the unit on site by filling it with concrete. No documented releases have occurred from this unit. The potential for past releases to on-site soils and groundwater is low to moderate because the facility could not provide evidence to show that this unit was not leaking or had adequate secondary containment. The potential for past release to surface water is low because any release from this unit would have to migrate upward to mingle with surface runoff, which appears unlikely. The potential for past release to air is also low because the waste this unit managed did not contain any volatile constituents.

Recommendations: PRC recommends that this unit be RCRA closed. PRC also recommends that subsurface soil near the abandoned unit be analyzed for cyanide, chromium, and zinc; if elevated cyanide, chromium, and zinc concentrations are detected in the subsurface soil, groundwater from areas downgradient of the unit should also be analyzed for cyanide, chromium, and zinc.

SWMU 16

Former Underground Railroad Tank Car

Conclusions:

This unit was a 20000-gallon steel underground railroad tank car located outside GBC's cardboard manufacturing building. It stored waste fuel oil and PCB-bearing waste transformer oil mixture (D001). The waste and the unit were removed to off-site locations during the CERCLA emergency removal action in 1989. During this removal action, the EPA contractor backfilled the tank pit with native soil. No documented releases have occurred from this unit. Information available to PRC does not show that EPA collected any subsurface soil samples from the pit of this removed unit during the CERCLA emergency removal action in 1989. The potential for past releases to on-site soils and groundwater is low to moderate because the facility could not provide any documents to show that this unit was not leaking or had adequate secondary containment. The potential for past releases to surface water is low because any release from this unit would have to migrate upward to mingle with the surface runoff, which appears unlikely. The potential for past releases to air is also low because this unit was removed in 1989 and the likelihood of any volatiles still being present in amounts that would impact the air is low.

Recommendations:

PRC recommends that subsurface soil from around the location of the unit be analyzed for PCBs, semivolatile compounds (SVOC), and total petroleum hydrocarbons (TPH); if elevated PCB, SVOC, and TPH concentrations are detected in the subsurface soils, groundwater from areas downgradient of the unit should also be sampled for PCB, SVOC, and TPH analysis.

SWMU 17

Former Decontamination Rinsate SAA

Conclusions:

This unit consisted of an approximately 10-foot by 10-foot concrete floor in the electroplating area. In this unit, EPA accumulated decontamination rinsate (D007 and F007) generated from the decontamination of tanks, equipment, and facility floor during the CERCLA emergency response action of 1989.

No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations: PRC recommends no further action at this time.

SWMU 18 Former Decontamination Rinsate Storage Area

Conclusions: This unit consisted of an approximately 40-foot by 15-foot asphalt-covered area of an outdoor parking lot located to the west of the electroplating building. In this unit, EPA stored containers with decontamination rinsate (D007 and F007) in a semi tanker trailer during the CERCLA emergency response action of 1989. No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations: PRC recommends no further action at this time.

SWMU 19 Former Outdoor CSA

Conclusions: This unit was an approximately 15-foot by 8-foot asphalt-covered area on the east shoulder of Manor Avenue. In this unit, EPA managed nonhazardous wastes in a 20-cubic-yard metallic roll-off box during the CERCLA emergency response action of 1989. No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations: PRC recommends no further action at this time.

RELEASED
DATE 9/29/99
RIN #
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SWMU 20 Former Nonhazardous Waste Accumulation Area

Conclusions: This unit was a 10-foot by 10-foot enclosed concrete floor located inside the former metal stamping area of the facility. Within this unit, the facility accumulated scrap steel (nonhazardous) in a 2-cubic-yard steel bin from 1984

ENFORCEMENT
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through 1989. No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations: PRC recommends no further action at this time.

SWMU 21 Former Western Outdoor CSA

Conclusions: This unit was located on an approximately 20-foot by 20-foot gravel area outside the western end of the electroplating building. It managed nonhazardous scrap steel in a 3-cubic-yard dumpster from 1984 through 1989. No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations: PRC recommends no further action at this time.

SWMU 22 Former Northern Outdoor CSA

Conclusions: This unit was an approximately 20-foot by 20-foot gravel area outside the northern end of the manufacturing building. It managed nonhazardous oil-soaked rags in a 3-cubic-yard steel dumpster from 1984 through 1989. No documented releases have occurred from this unit. The potential for past releases to all environmental media is low.

Recommendations: PRC recommends no further action at this time.

RELEASED
DATE 9/29/99
RIN #
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RELEASED
DATE 9/29/99
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TABLE 3
SWMU SUMMARY

<u>SWMU</u>	<u>Dates of Operation</u>	<u>Evidence of Release</u>	<u>Recommended Further Action</u>
1. Former Enclosed CSA	1930s to 1989	None	RCRA close this SWMU.
2. Former Drum Room CSA	1930s to 1989	Release occurred	RCRA close this SWMU; sample subsurface soil from the excavated floor of this SWMU and analyze for cyanide; if elevated cyanide concentrations are detected in the subsurface soil, sample groundwater from areas downgradient of SWMU 2 and surface water downstream from NPDES Outfall No. 001 for cyanide analysis.
3. Former Lacquer Room CSA	1930s to 1989	None	RCRA close this SWMU.
4. Abandoned Concrete Loading Dock	1930s to 1989	None	Sample subsurface soil from the vicinity of this SWMU and analyze for VOCs, cyanide, chromium, and zinc; if elevated VOC, cyanide, chromium, and zinc concentrations are detected in the subsurface soil, sample groundwater from areas downgradient of the unit and analyze for VOCs, cyanide, chromium, and zinc.

RELEASED
DATE 9/29/99
RIN #
INITIALS WJ

ENFORCEMENT
CONFIDENTIAL

TABLE 3

SWMU SUMMARY (Continued)

<u>SWMU</u>	<u>Dates of Operation</u>	<u>Evidence of Release</u>	<u>Recommended Further Action</u>
5. Former Waste Acid Storage Tank	1979 to 1988	Release occurred	The release has been addressed; RCRA close this SWMU.
6. Former Enclosed Waste Acid CSA	October 1988 to June 1989	None	RCRA close this SWMU.
7. Former Flocculent Storage Tank	Beginning date not available; operation ended in 1989	None	RCRA close this SWMU.
8. Former Cleaning Tank	1980 to 1989	Release occurred	The release has been addressed; RCRA close this SWMU.
9. Former Pickling Tank	1986 to 1989	None	None
10. Former Stripping Tank	1986 to 1989	None	None
11. Abandoned Floor Drains	1930s to 1989	None	Remove wastes from this SWMU to authorized off-site facilities for further handling.

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RIN #
INITIALS MS

ENFORCEMENT
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TABLE 3

SWMU SUMMARY (Continued)

<u>SWMU</u>	<u>Dates of Operation</u>	<u>Evidence of Release</u>	<u>Recommended Further Action</u>
12. Abandoned WWTPs	Northern plant: early 1970s to 1989 (treated wastewater from the early 1970s to 1978 and stored hazardous waste from 1978 to 1989.) Southern plant: 1978 to 1989 (treated wastewater from 1978 to 1986 and stored hazardous waste from 1978 to 1989.)	Discharge of cyanide, zinc, and chromium, in excess of the facility's NPDES permit limits, occurred	RCRA close this SWMU; sample water and sediments from the open ditch downstream of NPDES Outfall No. 001 and from Halfway Creek and analyze for cyanide, chromium, and zinc; if elevated cyanide, chromium, and zinc concentrations are detected in the water or sediments, sample groundwater from areas downgradient of the NPDES outfall for cyanide, chromium, and zinc analysis.
13. Abandoned Electroplating Laboratory	1930s to 1989	None	None
14. Former Waste Lacquer UST	1930s to 1989	There was no evidence provided by the facility that this underground storage tank was not leaking or had adequate secondary containment. In addition, EPA noted holes in this unit at the time of its excavation.	Sample subsurface soil from the location of this unit and analyze for VOCs; if elevated VOC concentrations are detected in the subsurface soil, sample groundwater from areas downgradient of SWMU 14 for VOC analysis.

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DATE 9/29/99
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ENFORCEMENT
CONFIDENTIAL

TABLE 3

SWMU SUMMARY (Continued)

<u>SWMU</u>	<u>Dates of Operation</u>	<u>Evidence of Release</u>	<u>Recommended Further Action</u>
15. Abandoned Spill-Control UST	1930s to 1989	There was no evidence provided by the facility that this underground storage tank was not leaking or had adequate secondary containment.	RCRA close this SWMU; sample subsurface soil from the vicinity of the abandoned unit and analyze for cyanide, chromium, and zinc; if elevated cyanide, chromium, and zinc concentrations are detected in the subsurface soil, sample groundwater from areas downgradient of the unit and analyze for cyanide, chromium, and zinc.
16. Former Underground Railroad Tank Car	Beginning date not available; operation ended in 1989	There was no evidence provided by the facility that this underground storage tank was not leaking or had adequate secondary containment.	Sample subsurface soil from around the location of this unit and analyze for PCBs, SVOCs, and TPHs; if elevated PCB, SVOC, and TPH concentrations are detected in the subsurface soil, sample groundwater from areas downgradient of the facility and analyze for PCBs, SVOCs, and TPHs.
17. Former Decontamination Rinsate SAA	June to September 1989	None	None

RELEASED
DATE 9/29/99
RIN #
INITIALS IMV

ENFORCEMENT
CONFIDENTIAL

TABLE 3

SWMU SUMMARY (Continued)

<u>SWMU</u>	<u>Dates of Operation</u>	<u>Evidence of Release</u>	<u>Recommended Further Action</u>
18. Former Decontamination Rinsate Storage Area	June to September 1989	None	None
19. Former Outdoor CSA	June to December 1989	None	None
20. Former Nonhazardous Waste Accumulation Area	1984 to 1989	None	None
21. Former Western Outdoor CSA	1984 to 1989	None	None
22. Former Northern Outdoor CSA	1984 to 1989	None	None

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- PRC. 1993c. Record of Telephone Conversation Between Hans Upadhyay, Geologist, PRC, and Paul Hudspetch, Climatologist, National Climatic Data Center (NCDC), Asheville, North Carolina. September 2.
- PRC. 1993d. Record of Telephone Conversation Between Hans Upadhyay, Geologist, PRC, and Merrita Fields, Office Manager, City of Albany, Indiana. June 14.
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- EPA. 1983. Letter to Richard Waltz, General Manager, Albany Plating. From Arthur S. Kawatachi. September 29.
- EPA. 1991. On-Scene Coordinator's Report. CERCLA Removal Action, Enginuity, Albany, Indiana. December 23.
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APPENDIX A
VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS
(Eight Pages)

VISUAL SITE INSPECTION SUMMARY

Enginuity, Inc.
(Formerly Albany Plating Works, Inc.)
501 East State Street
Albany, Indiana 47320
IND 094 470 028

Date: March 11, 1993

Primary Facility Representative: Dennis J. McCarthy, President, Enginuity, Inc.
1601 W. North Street
Springfield, Ohio 45504

Representative Telephone No.: (513) 322-2391

Additional Facility Representatives: None

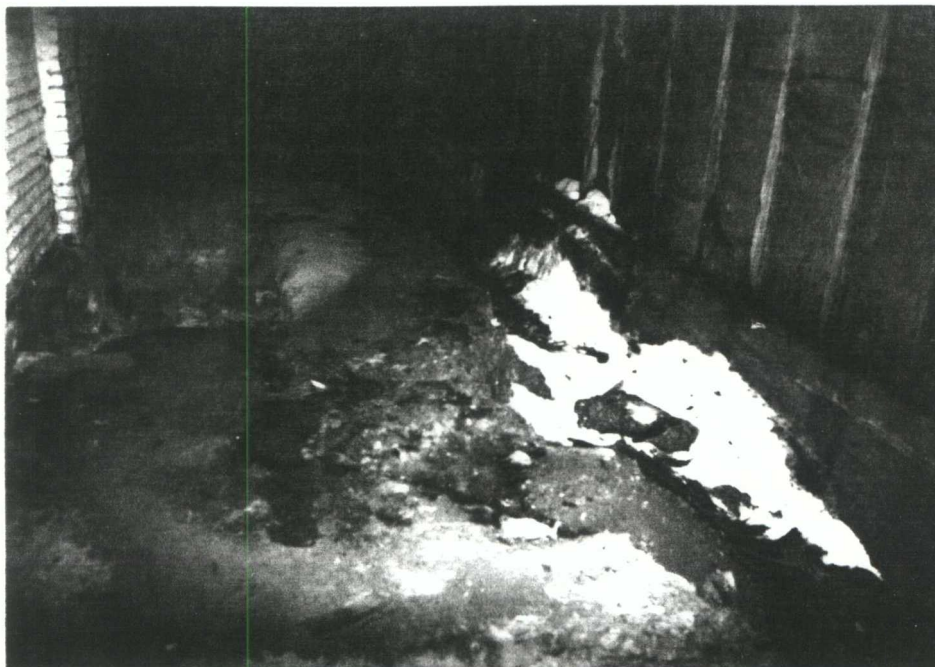
Inspection Team: Hans Upadhyay, PRC Environmental Management, Inc.
(PRC)
Celeste Brancel, PRC

Photographer: Celeste Brancel

Weather Conditions: Overcast, 30 °F

Summary of Activities: The visual site inspection (VSI) began at 9:30 a.m. on March 11, 1993 with an introductory meeting. The inspection team explained the purpose of the VSI and the agenda for the visit. The facility representative then discussed the facility's past operations, solid wastes generated, and release history. The facility representative provided the inspection team with copies of requested documents.

The VSI tour began at 2:30 p.m. The inspection team accompanied by the facility representative, inspected 22 SWMUs which are located inside and outside of the abandoned electroplating and the former stamping areas of the facility. At the time of the VSI, the former metal stamping area was leased to Grief Brothers Corporation, (GBC). The tour concluded at 3:50 p.m., after which the inspection team held an exit meeting with the GBC facility representative. The VSI was completed and the inspection team left the facility at 4:00 p.m.



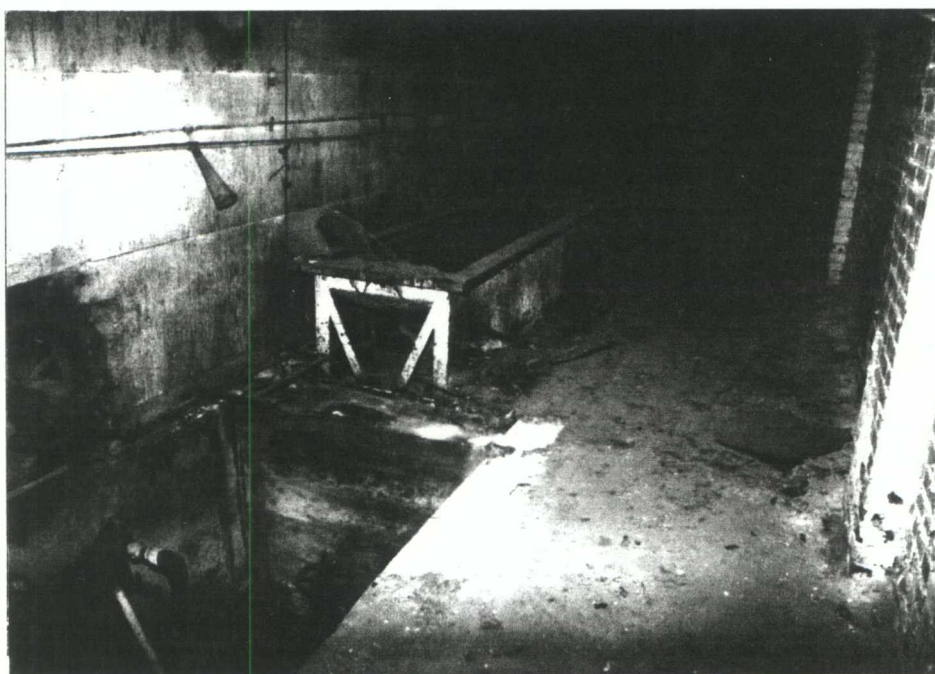
Photograph No. 1

Orientation: North

Location: SWMU 2

Date: March 11, 1993

Description: Former Drum Room Container Storage Area (CSA). The floor of this unit was excavated for the removal of visually contaminated soil during a CERCLA emergency removal action.



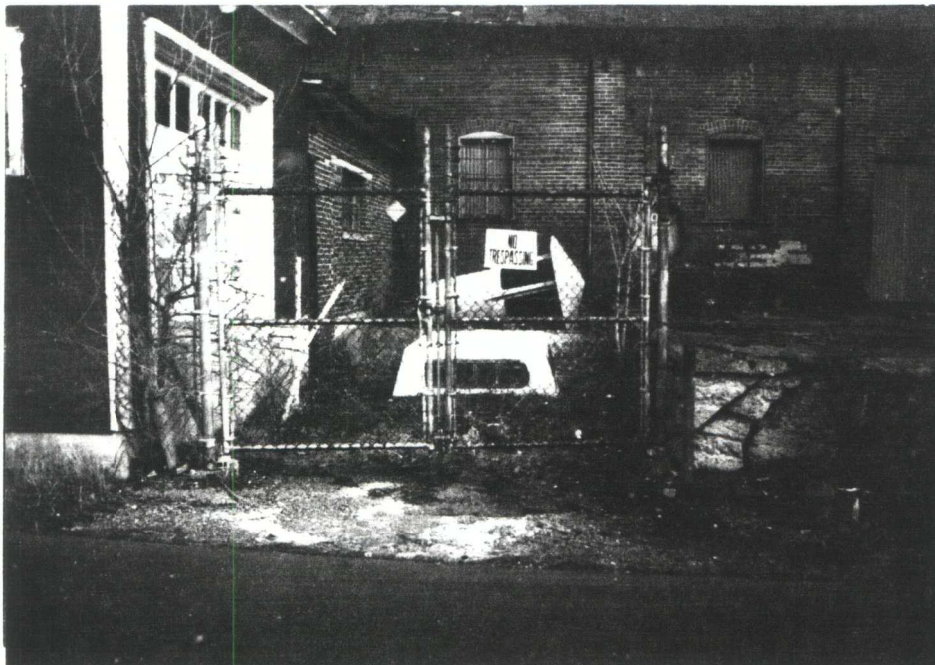
Photograph No. 2

Orientation: South

Location: SWMU 3

Date: March 11, 1993

Description: Former Lacquer Room CSA. The rectangular unit in the background is a lacquer dipping tank which did not store waste.



Photograph No. 3

Orientation: East

Description: Northern part of the Abandoned Concrete Loading Dock (SWMU 4) and Former Western Outdoor CSA (SWMU 21).

Location: SWMUs 4 and 21

Date: March 11, 1993



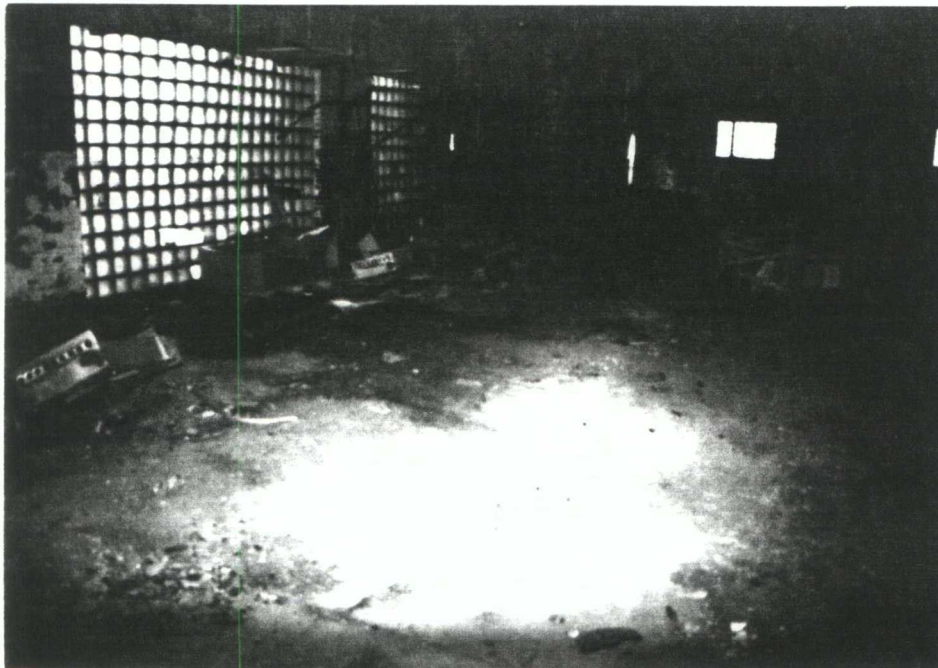
Photograph No. 4

Orientation: Northwest

Description: Location of the Former Waste Acid Storage Tank.

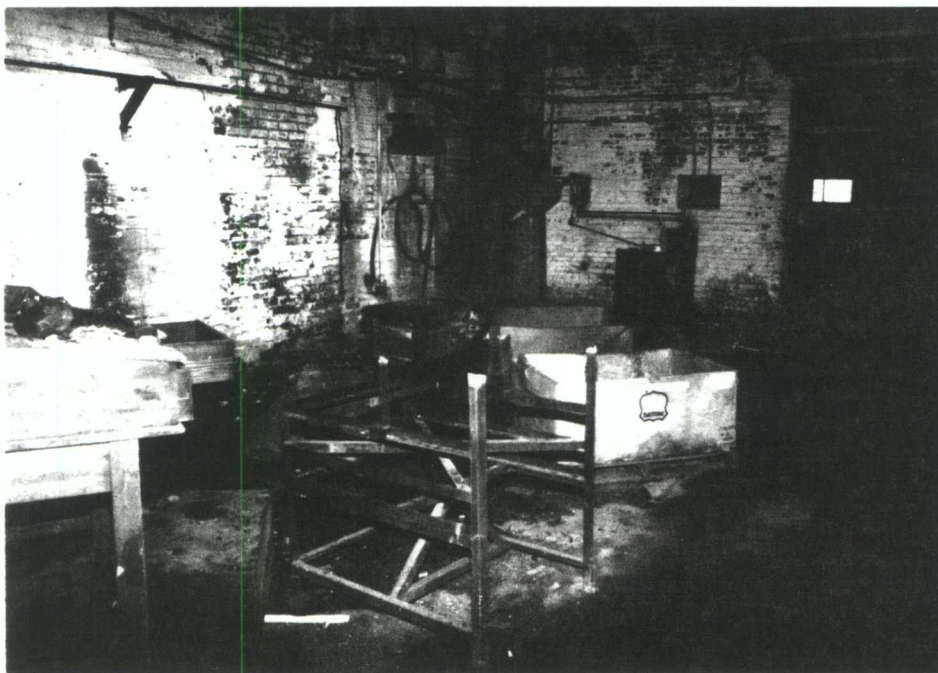
Location: SWMU 5

Date: March 11, 1993



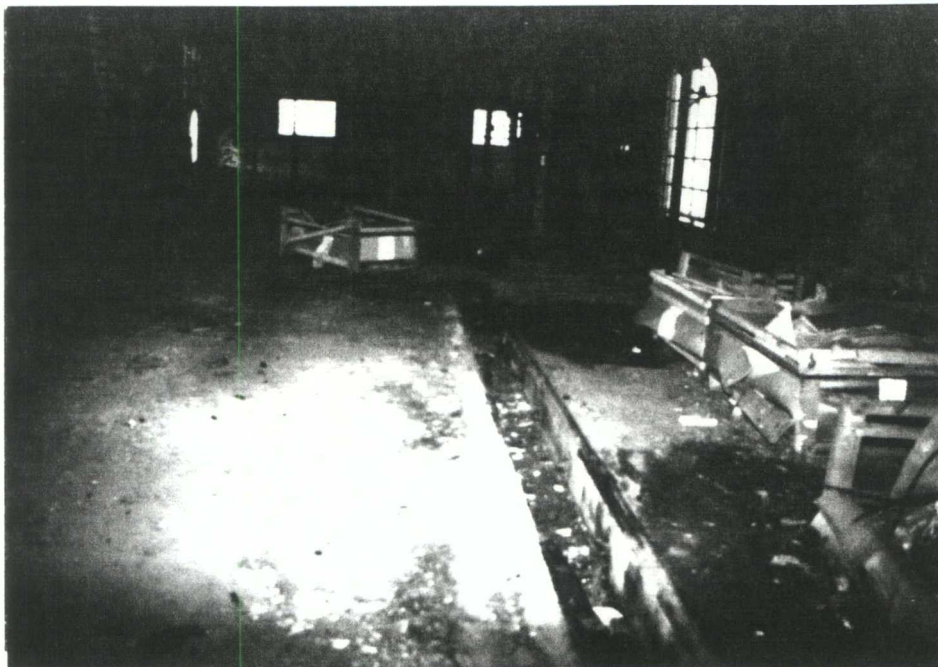
Photograph No. 5
 Orientation: Southeast
 Description: Former Enclosed Waste Acid CSA

Location: SWMU 6
 Date: March 11, 1993



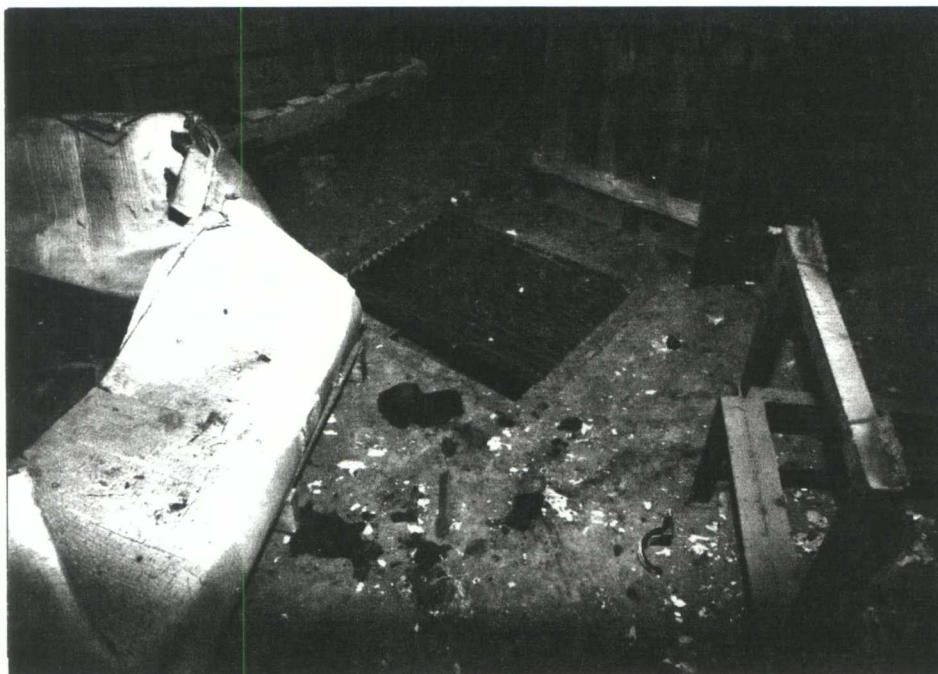
Photograph No. 6
 Orientation: Southeast
 Description: Location of the Former Cleaning Tank

Location: SWMU 8
 Date: March 11, 1993



Photograph No. 7
 Orientation: South
 Description: Abandoned Floor Drain

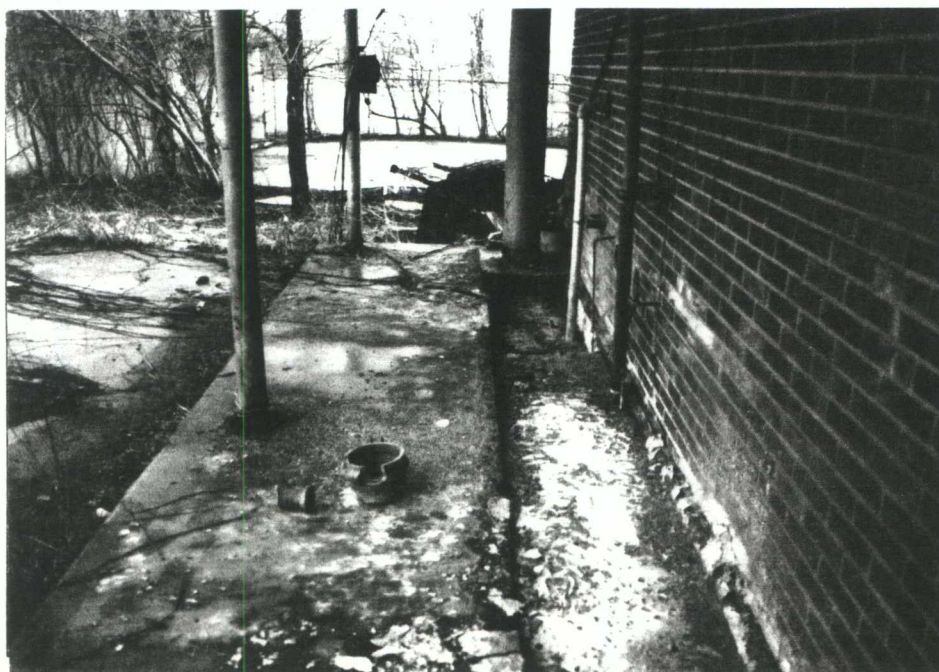
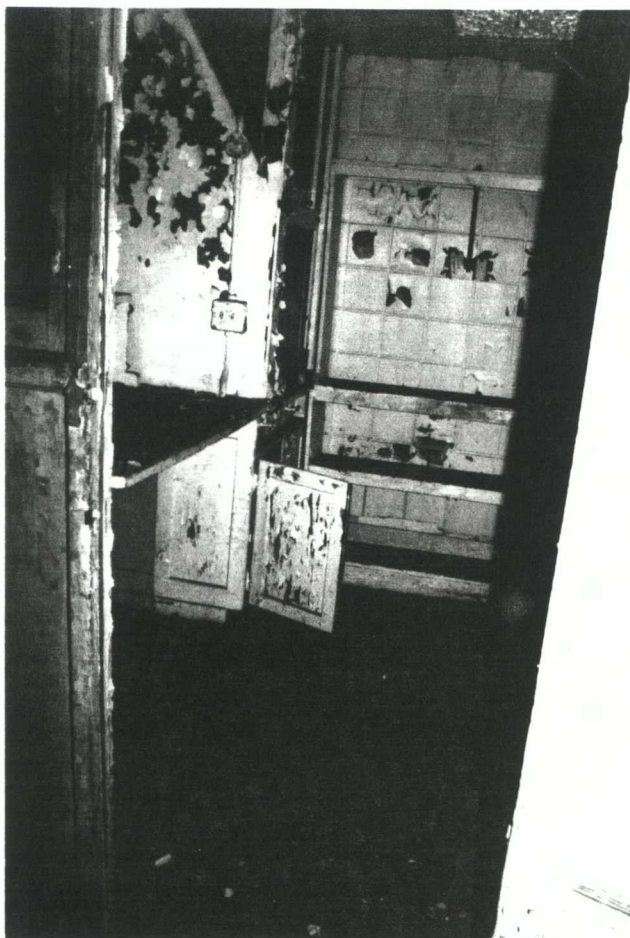
Location: SWMU 11
 Date: March 11, 1993



Photograph No. 8
 Orientation: Southwest
 Description: Manhole (center of photograph) to the collection tank of the southern Abandoned WWTP

Location: SWMU 12
 Date: March 11, 1993

Photograph No. 9
Location: SWMU 13
Orientation: West
Date: March 11, 1993
Description: Abandoned Electroplating
Laboratory



Photograph No. 10
Orientation: South
Description: Abandoned Spill-Control UST (left side of the photograph)

Location: SWMU 15
Date: March 11, 1993



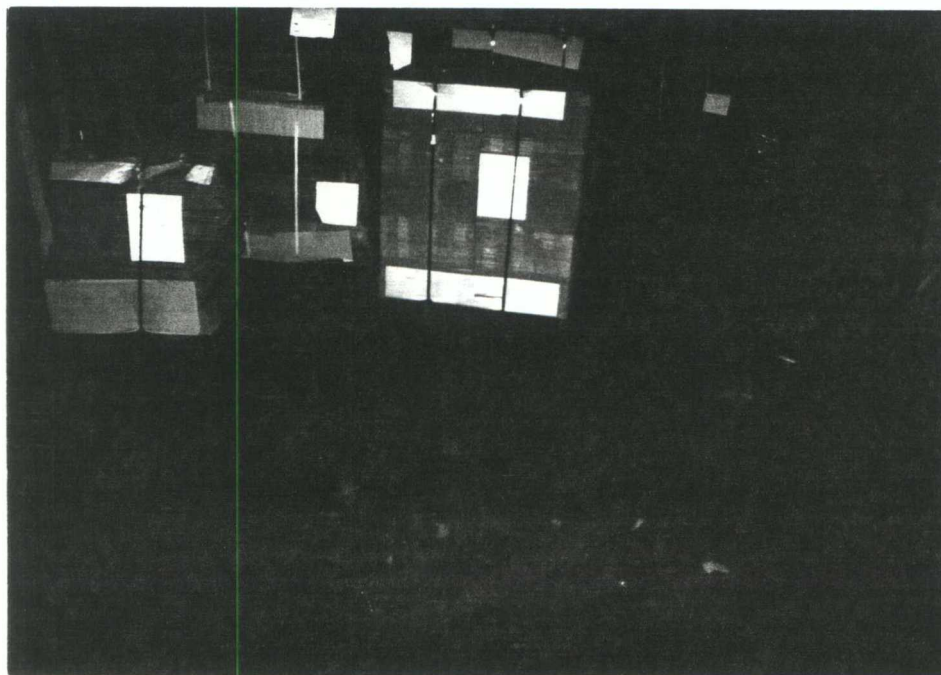
Photograph No. 11

Orientation: Northwest

Description: Location of the Former Underground Railroad Tank Car

Location: SWMU 16

Date: March 11, 1993



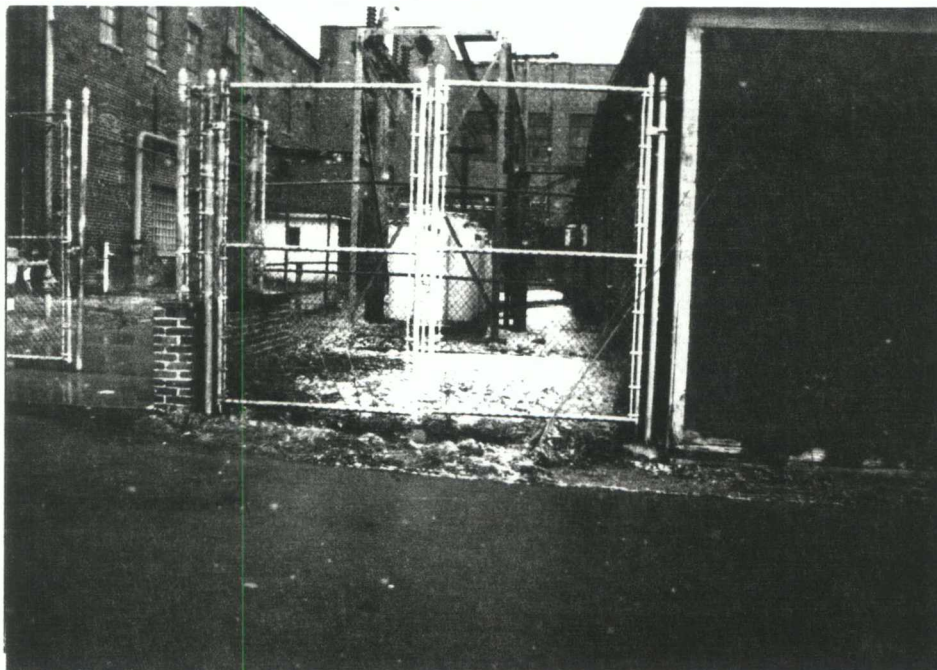
Photograph No. 12

Orientation: West

Description: Former Nonhazardous Waste Accumulation Area

Location: SWMU 20

Date: March 11, 1993



Photograph No. 13
Orientation: North
Description: Former Northern Outdoor CSA

Location: SWMU 22
Date: March 11, 1993

APPENDIX B
VISUAL SITE INSPECTION FIELD NOTES
(11 Sheets)

(31)

March 11, 1993

Albany Plating Works, Inc.
Albany, IN (Overcast, ~30°)

Dennis J. McCarthy 9:30 AM

Facility contact
New with M & W
Manufacturing Co.
Springfield, OH

Hans Upadhyay PRC
Celeste Brancel PRC

The meeting took place in car.

McCarthy's son's house, ~2
blocks SW of the facility.

The facility property is
spread so of state north of
maple, W of Dalton. Dennis
provided a detailed map
for area.

In late 1800s the
facility's NW part was a

(32)

hotel. McCormick Bros were the original owners & builders.

KDM Investment bought it from McC. Brothers in ~ 1978. McCormick Bros made refrigerator shelving & did plating work. In late 1960s McC. Bros had ~ 300 employees. McCormick Brothers stopped operations in ~ 1975. KDM continued McC Brothers' operations, although at a smaller scale. Made air cond. wires. Albany Plating, a subsidiary of KDM, began operation in 1978. McC Bros had

(33)

two plating units, Albany changed it to ~~two~~ one. (w)

In 1981 Enginuity Inc was formed. It purchased the plating equipment from KDM. Enginuity had no ownership of buildings. Enginuity was told by IDEM, by phone, that they could operate under Albany's permit, but ^{later} refused to do so.

Dennis, in 1982, bought the building. In 1983, D & H manuf. was established by Dennis McCarthy. D & H was owned & operated out of Springfield, OH. D & H of Ohio & Indiana were under separate

(34)

ownership. The D&H of Indiana was owned by Dennis' two sons & Joyce Walker. D&H of Ohio owned by Dennis. D&H of Indiana leased the sldg from Enginuity. Enginuity & D&H had similar operations. Enginuity Zinc plating by Enginuity used trivalent chrome. Enginuity did squeeze maps. D&H operated from mid 1984 to mid 1986. D&H stopped operations because of deteriorating business. No operations on site since mid 1986.

(35)

Enginuity assumed the loans of D&H. D. McCarthy submitted a 5-year clean up plan for the site to IDEM in early 1987; this plan was discussed with Mike Sickles of IDEM on phone, not in writing.

In ^{late} 1987 D. McCarthy introduced a power water, under Enginuity's operations. Enginuity planned trouble - light plating. IDEM did not allow any plating on site. So Enginuity sent them offsite for plating. Powder coated & fabricated trouble lights till late 1989. Enginuity

(36)

closed in mid 1988
 trouble light manufacturing
 because it could not
 afford plating them offsite.
 End of 1989 all work
 phased out.

Fabricating was taken
 over by Grief in late
 1989. Grief cut cardboard
 glue it & make boxes
 out of it (Grief Brothers, Inc.)
 Synflex, another leasee, began
 operations in 1983. They
 make single-face corrugated
 cardboard. In the stamping
 operation, a .02-inch wire
 is used & goes through
 stamping, wire welding &
 powder coating.

(37)

Ms. Jerry Reynolds leases
 ~1800 sq. feet of space at
 the NW corner, since 7/1992,
 aerobic exercise business.

Dennis did not know
 the # of employees KDM
 had. Enginuity had
 10 employees, one shift,
 5 days/wk. During squeeze
 map operations ~5 employees.

Grief Bros has 20-25
 employees; Synflex ~10 people
 (both run on shift, 5 days
 per week).

ENGINUTY OPERATIONS:
 Enginuity's squeeze maps
 arrive prefabricated, then
 go into plating line
 consisting of cleaning, &
 plating & rinsing. Then

(38)

air dried. Nonphosphate cleaners (industrial caustic cleaners) were used. Rinsed in water. Pickled (in HCl), then zinc-plating made up of zinc KCl, boric acid (pH ~ 4) (boric acid is a buffer), organic brighteners, chromic acid (trivalent chrome) (0.5 to 1% acid). Two metals are Zn & chrome. After plating they go to precipitate zinc. Sludge at the bottom of settling tank. Waste water went to McCormick Creek & to Mississippi River. Sludge

(39)

was generated @ two 55-gal barrels / 4 months. Waste water was @ 10 gals/minute. KDM had a permit for 400 gal/minute. Sludge remained on site & was removed by EPA in 1950. Sludge stored in 55-g drums. Waste water tested for pH & then discharged to McCormick Creek.

Wastewater treatment tank is 4' x 8' (long) & 4' (deep), concrete unit (volume ~ 2000 gal). A process tank (volume not known), then a 200-g tank (to adjust pH), then discharged to McCormick Creek. This unit was put in place ~ 1970; discontinued using it

(40)

in ~1986. The unit removed by EPA during CERCLA removal activities. Dennis did not know if EPA took any soil samples from the site of the WWT unit. It had a secondary containment (a concrete dike). No releases or spills from the WWT per se but one release in ~1988 occurred from the acid tank which was used for adjusting WW pH. Release detected by EPA.

D & H OPERATIONS:

Wires bent, welded together. Plating operation same as for Enginuity.

(41)

Coil wire is straightened and cut through a machine & falls in a hopper. Then goes to welding, then goes for plating. Scrap steel wire, cold-drawn & low-carbon, ~50-100 lbs/yr. Accumulated in scrap bin. Scrap dealer's name not known, from Muncie; recycled. The bin was 2 cubic yard steel hopper. Discontinued using it in 1989 under Enginuity. The bin was located on concrete floor. They used transmission grease for the cutting machine. Dennis did not recall any

(42)

change of this oil therefore no waste oil. Oil from the floor or machine was mopped & rags were accumulated in the general dumpster. The dumpster discontinued to be used in 1985. Volume of the dumpster \approx 2-3 cubic yards, made of steel & had a cover.

Services, Inc.

Dobrow of Muncie, IN, picked up the scrap steel.

ENGINEERING OPERATIONS: PHASE II

Powder-coated tracks, shelves, & trouble light fabrications. D & H's hog feeder grids discontinued. Trouble lights were

(43)

made by stamping steel (shear draw, trim, curl & punch). Scrap steel was generated 4,000 lbs total during the entire 2nd phase of Engineering. Stored in steel hopper, 2-3 cubic yds, picked up by Dobrow of Muncie. In stamping, water-soluble oil (40 water, 1 oil) is used as a lubricant. They kept adding new lubricant and never changed it. Dennis did not know the rate of lubricant use. No floor drains where the stamping machines were. Foreslide machine makes a horse-shoe-shaped

(44)

wire & a hook. Six heads are welded together. No gases emitted during this welding.

Powder coating tracks/shelves involves pre-dried parts. These are hung on racks & powder coated. The powder is made of epoxy. The powder melts, flows, gels, and cures. The shelves go through a bath where ~~molten~~ powder is mobilized & electrostatically attaches to the shelves. Then it goes through an oven ^{melting} for 10-12 minutes (flowing, gelling, and curing).

(45)

Waste powder gets on the floor. They sweep it up. Facility considers it non-haz based on MSDS. This waste went to the general dumpster. Off-spec coating collected in the general dumpster. The oven is vented to the outside. The oven is electric.

McCormick had a buried fuel oil tank on site. Outdoor transformers had PCBs. DNR in 1984-85, replaced the transformers.

No USTs on site now. Some cisterns on site.

Two WWT units. McCormick handled chromate in one

(46)

and cyanide in the other.

An underground concrete tank SE corner of Oak & Manor has 10,000 gallon capacity. It received floor drains from north across Oak Street. It was never used during Enginuity's ownership. EPA, according to Dennis, filled it with concrete.

Enginuity had discharge permits, which were inherited from Albany Plating.

All drains from the facility go to the City Sanitary system. Water (surface) flows towards

(47)

the south.

The facility has been asked to complete a site assessment by the State Attorney General (Ms. Williams), sometime in 1992. Dennis is in negotiating with IDEM on this.

City gets its drinking water from wells, located to the west of the city. Three wells are located in a park. W.T. is ≈ 12 ft below surface.

Meeting ended at 2:20 PM

• VSI began at 2:30 PM

Stamping area. Has cardboard boxes (product)

Photo 1 \rightarrow 3

(48)

Scrap steel barrel's
former location, now
accumulates products
(cardboard boxes).
Has some superficial
cracks

Photo # ~~4~~ ⁴ and 5

Cyanide sludge
storage area

\rightarrow W; #4 is vertical

#5 horizontal

Shows the
flow/ground

#6 Lacquer production
area \rightarrow SE

#7 \rightarrow NE

Lacquer drop tanks

#8 \rightarrow NE

(49)

Acid product drums

#9 SE Stepped acid drums
for acid tanks

#10 Trench (man) & piping {Phosfit-
baths MIC

#11 Trench & more acid
product drums

#12 Holding tank for WW
unit

#13 Lab

#14 Acid holding tank
that was found leaking

#15 Cyanide tank site

#16 " " " " VERTICAL
(insulation pipe)

#17 TRASH DUMPSTER \rightarrow SE
(outside the fence)

(50)

#18 steel scrap tank

→ E

#19 W. side of bldg.

→ E damaged roof

#20 → N CATCH BASIN

#21 Tanks from (outside)
spill prevention

#22)) "(inside)

#23 → NE

Unknown open tank

#24 → NW Former rail
car tank (UST)

#25 → NW Top of the removed
rail car tank (#24)

VSI completed at 3:50 PM

Exit meeting at 3:50 PM

PRC off site 4:00 PM

Plans ready

ATTACHMENT A
REMOVAL ACTION PLAN FOR ENGINEITY, INC., BY WESTON-SPER
(22 Sheets)



River Center, 111 North Canal Street, 8th Floor, Suite 855,
Chicago, IL 60606 • (312) 993-1067

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

Mr. Steven Faryan
Deputy Project Officer
Emergency Response Section
Western Response Unit
U.S. Environmental Protection Agency
11th Floor
230 South Dearborn Street
Chicago, Illinois 60604

January 10, 1989

TAT-05-G2-00848

Re: Enginuity, Inc., Albany, Indiana
TDD #5-8810-03

Dear Mr. Faryan:

The U.S. Environmental Protection Agency (U.S. EPA) on October 3, 1988, tasked the Technical Assistance Team (TAT) to conduct a site assessment (SA) at the Enginuity, Inc. (Enginuity) site in Albany, Indiana.

On October 19 and 20, 1988, TAT members Paul Szewczykowski, Tami Renkoski, and Chris Fluder, and On-Scene Coordinator (OSC) Richard Rupert conducted a SA at the Enginuity plating facility. Based on site conditions observed, OSC Rupert requested that a removal action plan (RAP) be prepared by the TAT. The attached RAP details the site history and conditions observed during the site inspection.

To mitigate the threats outlined in the attached RAP, the TAT recommends that a removal action be undertaken by the responsible party (RP). The presence of vats of acid and cyanide solutions from the abandoned plating operation in conjunction with employees working in adjacent sections of the building necessitates an immediate removal action. If the RPs are unable or unwilling to mitigate the threats, then the U.S. EPA should conduct a removal action under the authority of the Superfund Amendment Reauthorization Act (SARA) of 1986, and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 following the guidelines set forth in the National Contingency Plan (NCP).

Roy F. Weston, Inc.

SPILL PREVENTION & EMERGENCY RESPONSE DIVISION

In Association with ICF Technology Inc., C.C. Johnson & Malhotra, P.C., Resource Applications, Inc.,
Geo/Resource Consultants, Inc., and Environmental Toxicology International, Inc.

WESTON • SPER

Mr. Steven J. Faryan

-2-

January 10, 1989

The attached RAP provides a nine point approach to mitigate the threats posed by the site. The cost of the removal, based on 30, 10-hour work days using O.H. Materials rates is \$598,000.

Should you have any questions, or require additional information, please feel free to contact us.

Very truly yours,

ROY F. WESTON, INC.

Paul Szewczykowski

Paul Szewczykowski
Hydrogeologist

Sally Matz

FOR Phillip Wicklein
Technical Assistance Team
Leader, Region V

DC/jj
Attachment

REMOVAL ACTION PLAN

FOR

**ENGINEUITY, INC.
ALBANY, INDIANA**

Prepared for:

**U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois**

CONTRACT NO. 68-01-7367

TAT-05-G2-00848

TDD NO. 5-8810-03

Prepared by:

**WESTON-SPER
Technical Assistance Team
Region V**

January, 1989

TABLE OF CONTENTS

	<u>PAGE</u>
LIST OF FIGURES.....	iii
LIST OF TABLES.....	iv
LIST OF ATTACHMENTS.....	v
1.0 SITE DESCRIPTION.....	1
2.0 SITE BACKGROUND.....	1
3.0 SITE INSPECTION.....	5
4.0 ANALYTICAL RESULTS.....	7
5.0 THREATS TO HUMAN HEALTH AND THE ENVIRONMENT.....	7
6.0 RECOMMENDATIONS.....	11
7.0 COSTS.....	11
8.0 COST SUMMARY.....	15
REFERENCES.....	16

LIST OF FIGURES

	<u>PAGE</u>
FIGURE 1 - SITE LOCATION MAP.....	2
FIGURE 2 - SITE BUILDING MAP.....	3
FIGURE 3 - PLATING FACILITY MAP.....	6

LIST OF TABLES

	<u>PAGE</u>
TABLE 1 - ANALYTICAL RESULTS OF TAT SAMPLING.....	8
TABLE 2 - REMOVAL ACTION PROJECTED SCHEDULE.....	12

LIST OF ATTACHMENTS

ATTACHMENT A - COST ESTIMATES

ATTACHMENT B - PHOTOGRAPHS

1.0 SITE DESCRIPTION

The Enginuity, Inc. (Enginuity) site is located in Delaware County, Indiana (Figure 1), at 501 East State Street in the city of Albany. The property encompasses approximately two acres and is bordered to the north by State Street, to the east by Dalton Avenue, to the west by Manor Avenue, and to the south by Walnut Street. The facility is centrally located in the city of Albany and is bordered by residences on all sides. The nearest residence is within 100 feet of the facility.

The site consists of one large building which is divided into three sections including a non-operating plating operation, a currently operating metal stamping operation, and a cardboard box manufacturing process (Figure 2).

The topography of Delaware County is predominantly flat with gently rolling hills. The land slopes gradually downward from the southeast part of the county (1,100 feet above sea level maximum) to the northwest and west (835 feet above sea level minimum).

Albany lies within the Mississinewa River drainage basin which drains the northeastern part of the county (DNR, 1968). The Enginuity site is located approximately 1000 feet east of Halfway Creek, a tributary to the Mississinewa River. This creek flows through residential areas in the city of Albany.

The surficial geology of Delaware County consists of a relatively impermeable layer of glacial till and silt which limits ground water recharge. Underlying this till, is a layer of glacial drift ranging in thickness from 0 to 300 feet. Within the drift, the principal aquifer consists of sand and gravel up to 80 feet thick and is utilized for domestic and industrial use. A bedrock aquifer of dolomite underlies the entire county and is utilized for domestic, industrial and municipal use. The top of the dolomite aquifer is at a depth of less than 40 feet below the land surface in Albany (DNR, 1968).

2.0 SITE BACKGROUND

Currently, the site building is owned by Enginuity of which Dennis McCarthy is president. Mr. McCarthy's sons, Mike and Kelly McCarthy, operate the a stamping operation while Enginuity leases part of the building to a cardboard box manufacturer.

The plating facility has changed ownership and operators repeatedly since 1978. Prior to 1978, McCormick Brothers Corporation operated the facility. On July 5, 1978, KDM Investment Corporation purchased the facility at which time Albany Plating Works, Inc. became the operator. Mr. McCarthy,

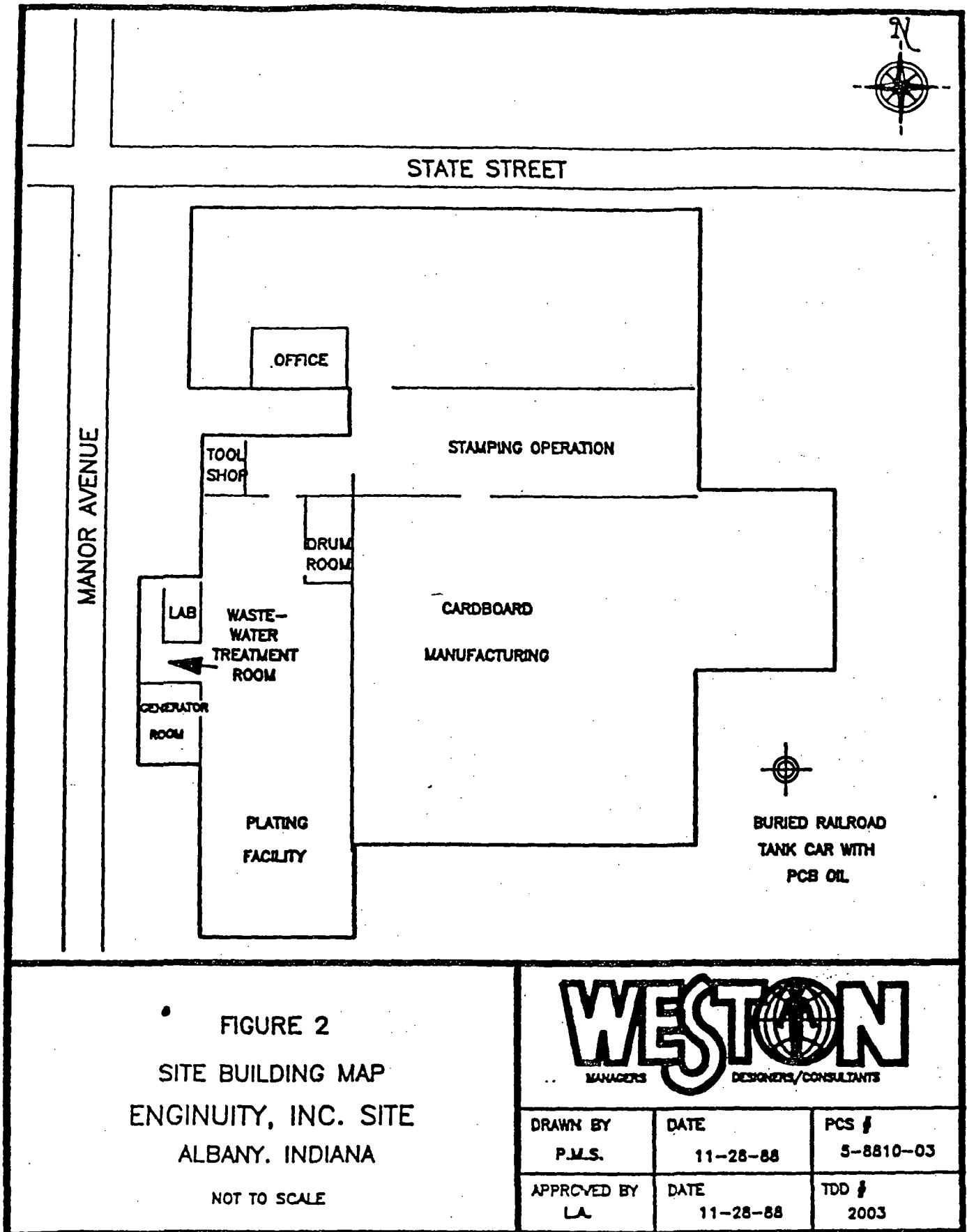


FIGURE 1
SITE LOCATION MAP
ENGINEUTY, INC. SITE
ALBANY, INDIANA

SCALE: 0 1 2 3 4 5 Miles
0 2 4 6 8 Kilometers

WESTON
MANAGERS DESIGNERS/CONSULTANTS

DRAWN BY P.M.S.	DATE 10-06-88	PCS # 5-8810-03
APPROVED BY LA	DATE 10-06-88	TDD # 2003



president of Enginuity, became the operator of the facility in 1981. On September 1, 1982, Enginuity became the owner of the facility by mortgage foreclosure. Between February 1984 and April 4, 1986, D&H Manufacturers operated the plating facility and Enginuity retained ownership. Joyce Walker, president of D&H, was ordered to evacuate the premises by Enginuity on April 4, 1986. Hazardous wastes were reportedly left abandoned on the premises and have remained there to date. Enginuity has retained ownership and reportedly by the Indiana Department of Environmental Management (IDEM) has been operating the plating facility from 1986 until sometime in 1987.

Presently, McCormick Brothers Corporation, KDM Investment Corporation, Albany Plating Works, Inc., and D&H Manufacturers, Inc. are all defunct corporations in Indiana.

During a compliance inspection on December 5, 1985, by the Indiana State Board of Health [(ISBH) now the IDEM], several samples were collected from tanks in the facility. Results indicated the presence of high concentrations of cyanide (up to 190,000 ppm) in several of the tanks. Also, according to the IDEM, the facility has discharged effluent to Halfway Creek since at least the late 1970's.

On March 5, 1987, Bruce Kizer of the IDEM Office of Solid and Hazardous Waste Management (OSHWM), conducted an inspection of the facility during which it was determined that Enginuity was in violation of Indiana Code 13-7, the Environmental Management Act, and the Hazardous Waste Management Rules.

On August 28, 1987, a Notice of Violation was issued to Enginuity by the commissioner of the IDEM. On November 24, 1987, Enginuity was issued an order by the Commissioner of the IDEM to cease violations; to prepare a closure plan; and to pay a civil penalty in the amount of \$52,350.

The U.S. Environmental Protection Agency (U.S. EPA) was asked by the IDEM to attend a meeting concerning the Enginuity site and to conduct a site assessment (SA) of the plating facility.

On October 18, 1988, Technical Assistance Team (TAT) member Paul Szewczykowski accompanied U.S. EPA On-Scene Coordinator (OSC) Richard Rupert to a meeting held at the IDEM office in Indianapolis. Presiding over the meeting was Jim Lynch of the IDEM Office of Environmental Investigations. Also present were the following IDEM-OSHW representatives: Bruce Kizer, Jay Rodia, Kevin Hogan and Mike Sickels. Deputy Attorney General Larry Ferbicca was also present. The history of the Enginuity facility was discussed and the IDEM representatives indicated that the state would pursue criminal charges against the facility owners.

Following the meeting, OSC Rupert tasked the TAT to conduct a site inspection at the Enignuity facility.

3.0 SITE INSPECTION

On October 19, 1988, TAT members Paul Szewczykowski, Tami Renkoski, and Chris Fluder met with OSC Rupert, and the facility operators, Kelly and Mike McCarthy, at the site. The TAT conducted air monitoring throughout the facility's plating operations building with an organic vapor analyzer (OVA), combustible gas indicator (CGI), radiation meter, and Draeger pump equipped with hydrogen cyanide gas (HCN) detector tubes. Two parts per million (ppm) of HCN were detected in the atmosphere directly above an open tank that reportedly contained cyanide solution (sample location #4 - Figure 3). Also an OVA reading of 2 units was detected inside the south end of a small room containing drums. All other ambient air readings were at background levels.

The TAT documented the presence of 40 drums in a small room in the former plating operation area (Figure 3). Those drums were identified as containing cyanide sludge and lacquer waste by Mr. Dennis McCarthy, who arrived at the facility on October 20, 1988. The TAT also observed corroded drums covered with plastic sheeting, open drums that had spilled material onto the floor, and an open open tank of lacquer.

Adjacent to this room was a 5,500 gallon open-top tank with a pH of 11 that reportedly contained cyanide solution. Within the main plating room was a below floor open-top tank containing approximately 2,700 gallons of what was described by Mr. Dennis McCarthy as cyanide-contaminated treatment water. Another below floor tank also containing approximately 2,700 gallons of liquid, reportedly contained non-cyanide waste. A tank containing approximately 600 gallons of an acidic material (pH 0-1) was within 15 feet of the below floor cyanide solution tank. Approximately one to three gallons of acid had leaked onto the floor from the acid tank. This open-top tank was covered with a piece of plywood and was located beneath several large holes in the roof of the building. In addition, the main plating room contained an open tank containing approximately 2,000 gallons of a flocculant material and approximately 12 open vats with varying volumes of liquids (pHs ranging from 6 to 12). Several other drums labeled as corrosives were observed throughout the facility.

A laboratory area containing over 50 chemical reagent bottles of varying volumes was located in the main plating room. An additional 40 bottles and several drums of assorted chemicals, including acids, were found discarded in a junk pile located about 7 feet from the 5,500 gallon cyanide tank. A buried

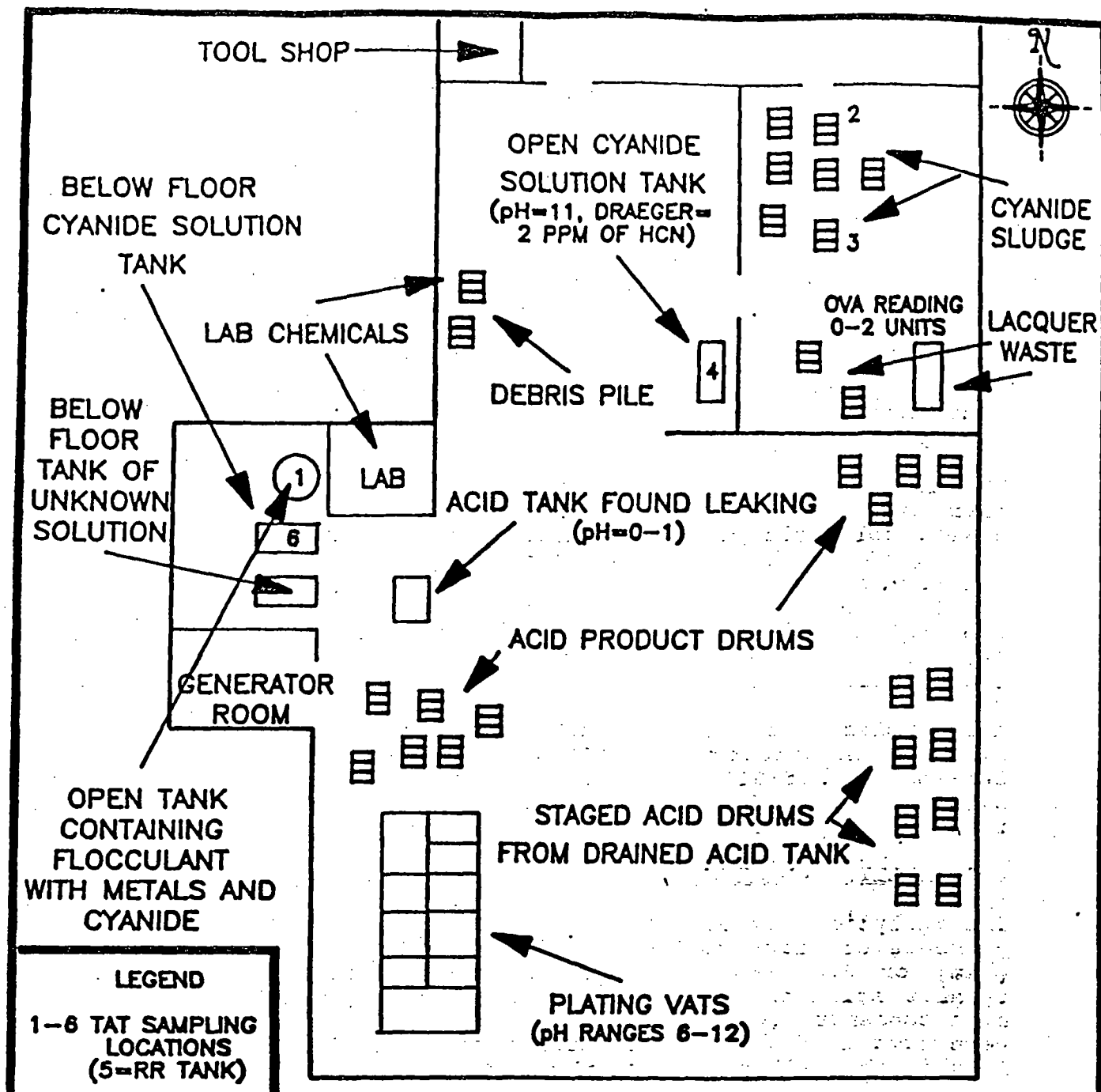


FIGURE 3
PLATING FACILITY MAP
ENGINEUITY INC. SITE
ALBANY, INDIANA

NOT TO SCALE



DRAWN BY P.M.S.	DATE 11-30-88	PCS # 2003
APPROVED BY L.A.	DATE 11-30-88	TDO # 5-8810-03

railroad tank car containing an estimated 2,000 to 5,000 gallons of oil believed to be contaminated with polychlorinated biphenyl (PCBs) was observed outside the building near a loading dock.

Due to the immediate threat posed by the leaking acid tank in proximity to the below ground cyanide solution tank, the U.S. EPA ordered Mr. Dennis McCarthy to conduct a containment action of the acid on October 19, 1988.

On October 20, 1988, under direction and assistance of the U.S. EPA, Dennis and Kelly McCarthy pumped approximately 600 gallons of acid out of the leaking tank and into poly drums for containment. Acid which had already spilled onto the concrete floor was neutralized with a basic solution and water. During containment of the acid, 40 residences were evacuated by the IDEM as a precautionary measure.

The TAT, under the direction of OSC Rupert, collected samples from six locations on-site (Figure 3). Sample #1 consisted of a wet, solid flocculant material from an open-top tank. Samples #2 and #3 consisted of reported cyanide sludge from closed and open drums, respectively. Sample #4 consisted of solution from the 5,500 gallon open-top cyanide tank. Sample #5 was collected from the buried railroad tank car located outside the building (Figure 2) and consisted of oil. Sample #6 consisted of liquid from a below-floor tank.

The samples were delivered to Suburban Laboratories in Hillside, Illinois on October 24, 1988 for analysis under TAT Analytical Services TDD #5-8810-L4. The samples were analyzed for Hazardous Substance List (HSL) metals, cyanide, and PCBs. Results were received November 8, 1988.

4.0 ANALYTICAL RESULTS

The analytical results are summarized in Table 1 and display the presence of high concentrations (up to 80,700 parts per million [ppm] or 8.07%) of cyanide in samples from the 5,500 gallon cyanide solution tank and from drums of cyanide sludge. Also, high concentrations of chromium (4,932 ppm) and zinc (40,920 ppm) were detected in the flocculant sample. The concentration of PCBs in the railroad tank oil was 4.75 ppm.

5.0 THREATS TO HUMAN HEALTH AND THE ENVIRONMENT

5.1 Threats as Related to the National Contingency Plan (NCP)

The conditions observed at the Enginuity facility meet several of the criteria that may be considered in warranting a removal action as outlined in the NCP Section 300.65. The conditions include:

ANALYTICAL RESULTS ON TAT SAMPLING
 ENGINEITY, INC.
 October 19, 1988
 (Results in ppm unless noted)

PARAMETER	SAMPLE #1 (WET SOLID-FLOCCULANT)	SAMPLE #2 CLOSED DRUM (DRY SLUDGE)	SAMPLE #3 OPEN DRUM (DRY SLUDGE)	SAMPLE #4 TANK (LIQUID)	SAMPLE #5 TANK (OIL)	SAMPLE #6 TANK (LIQUID)
ALUMINUM	102	NA	NA	NA	NA	NA
ANTIMONY	26.2	NA	NA	NA	NA	NA
ARSENIC	1.80	NA	NA	NA	NA	NA
BARIUM	79.4	NA	NA	NA	NA	NA
BERYLLIUM	ND	NA	NA	NA	NA	NA
CADMIUM	ND	NA	NA	NA	NA	NA
CALCIUM	12835	NA	NA	NA	NA	NA
CHROMIUM (TOTAL)	4932	NA	NA	NA	NA	NA
COBALT	1.10	NA	NA	NA	NA	NA
COPPER	15.6	NA	NA	NA	NA	NA
IRON	2516	NA	NA	NA	NA	NA
LEAD	ND	NA	NA	NA	NA	NA
MAGNESIUM	3304	NA	NA	NA	NA	NA
MANGANESE	30.1	NA	NA	NA	NA	NA
MERCURY	0.0029	NA	NA	NA	NA	NA
NICKEL	14.9	NA	NA	NA	NA	NA
POTASSIUM	346	NA	NA	NA	NA	NA
SELENIUM	ND	NA	NA	NA	NA	NA
SILVER	ND	NA	NA	NA	NA	NA
SODIUM	53460	NA	NA	NA	NA	NA
TIN	ND	NA	NA	NA	NA	NA
THALLIUM	ND	NA	NA	NA	NA	NA
VANADIUM	ND	NA	NA	NA	NA	NA
ZINC	40920	NA	NA	NA	NA	NA
CYANIDE (TOTAL)	15.3	9067	2.07%	8.07%	NA	ND
PCBs (AROCHLOR 1260)	NA	NA	NA	NA	4.75	NA

ND - Not detected at method detection limits

NA - Not analyzed for

Analytical performed by Suburban Laboratories, Hillside, Illinois

- o Actual or potential exposure to hazardous substances by nearby populations, animals, or food chain;
- o Hazardous substances in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release; and,
- o Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Based on these conditions, the Enginuity facility poses a potential threat to human health and the environment. The following subsections discuss each of these conditions.

5.1.1 Potential Exposure to Hazardous Substances

The acid leak documented during the SA on October 19, 1988 demonstrated the potential for exposure of the nearby population to hazardous materials from the site. The leak, which occurred in proximity to a below-floor cyanide solution tank, posed a serious threat to the community. The continued presence of large quantities of corrosive acids and reactive chemicals stored inside the deteriorating building, combined with the proximity of employees working in the same building, makes the threat of exposure very great. Cyanide and acids when combined, can form HCN gas, capable of killing humans at concentration levels as low as 50 ppm.

During a 1982 inspection of the facility by the Indiana Stream Pollution Board, a discharge of zinc and chromium electroplating wastewater from the facility to Halfway Creek was observed. This observation documents a direct route to the environment of potentially toxic substances. Zinc and chromium are documented as being toxic to aquatic life at low concentrations.

5.1.2 Threat of Release

The presence of thousands of gallons of cyanide solutions, cyanide waste solids, and acids and bases in open vats pose a threat of release. Field tests of pH levels in the various containers demonstrated a pH range of 0 to 12. A 600 gallon tank with a pH of 1 was observed to be leaking during the SA. Rain water entering through holes in the roof could cause vats and tanks to overflow.

In addition, the presence of a buried railroad tank car potentially containing several thousand gallons of PCB contaminated oil also poses a threat of release since the structural integrity of the tank is unknown.

5.1.3 Potential Migration Due to Weather Conditions

Inspection of the plating building revealed several large holes in the ceiling above the open-top plating tanks containing acid solutions and near a below-floor storage tank of cyanide solution. Rainwater could react with the cyanide solution resulting in a release of HCN gas. Rainwater could also cause open-top tanks to overflow acids and cyanide solutions to floor drains. The presence of numerous floor drains in this building leading to unknown discharge points are a potential avenue for migration of chemical wastes off-site.

5.2 Chemical Hazards of Contaminants Documented at the Site

Chemical hazards such as heavy metals, cyanide, acids, bases and PCBs have been documented at the site and are potential threats to human health and the environment. These specific threats will be elaborated on in the following subsections.

5.2.1 Acids

Acids, such as hydrochloric and nitric, can cause skin and eye irritation and burning, mucous membrane and respiratory inflammation, choking, and bronchitis. Routes of exposure include skin and eye contact, inhalation of vapors and ingestion.

5.2.2 Bases

Bases can cause sinus irritation and burning of the eyes and skin. Exposure routes are the same as acids.

5.2.3 Cyanide

Cyanide, in the presence of acids, may produce HCN, which can cause weakness, headache, nausea, eye and skin irritation, gasping, confusion and at high levels (50 ppm for HCN), asphyxia and death. Exposure may occur via inhalation of vapor, skin absorption of liquid and vapor, ingestion, and eye and skin contact.

5.2.4 PCBs

PCBs are considered to be potential human carcinogens and exposure via inhalation, ingestion or skin contact can result in chloracne, liver damage, and irritation. PCBs are known to be carcinogenic in some animal systems.

5.2.5 Metals

Heavy metals, such as zinc and chromium, at high concentrations, can cause skin irritation and discoloration, headache, ulceration

and irritation of nasal passages, respiratory disorders and may increase the risk of lung cancer.

Hexavalent and trivalent chromium are documented as being chronically toxic to aquatic life at 0.29 parts per billion (ppb) and 44 ppb, respectively, while zinc is chronically toxic at 47 ppb.

6.0 RECOMMENDATIONS

The presence of open tanks of acid and cyanide solutions in combination with a deteriorating building roof, necessitates an immediate removal action. On the basis of the health and environmental threats posed by the Enginuity facility, the TAT recommends that a removal action be undertaken by the responsible party (RP). If the RP is unable or unwilling to mitigate the threats then the U.S. EPA should conduct a removal action under the authority of the Superfund Amendment Reauthorization Act (SARA) of 1986, and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 following the guidelines set forth in the NCP.

7.0 COSTS

Prior to commencing work, it will be necessary to specify the various work zones, install the needed equipment and mobilize personnel. Electricity and telephones will be required in the office trailer throughout the duration of the project. Contingency and safety plans will be developed and implemented, including notification procedures in the event of an incident. The safety plan will identify the following zones on site; hot zone, contamination/reduction zone, decontamination zone, and support zone, and include emergency numbers, such as the hospital and fire department.

On-site treatment was evaluated as an alternate approach to a removal but was ruled out due to the proximity of residences to the facility. The cost estimates (Attachment A) for the recommended removal action plan were developed using O.H. Materials as the Emergency Response Cleanup Service (ERCS) Contractor. The estimates and projected schedule (Table 2) were developed assuming thirty 10-hour working days.

7.1 Mitigative Tasks

The following nine point plan is proposed to mitigate the potential threats to human health and the environment posed by the site:

7.1.1. Inventory and Sample Drums, Tanks and Vats

All tanks and vats inside or outside the building will be sampled and inventoried.

TABLE 2

REMOVAL ACTION PROJECTED SCHEDULE
 ENGINUITY, INC.
 ALBANY, INDIANA

ACTIVITY	PERIOD OF PERFORMANCE (DAYS)																													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
DEVELOP SITE SAFETY AND CONTINGENCY PLAN	-----																													
SITE SECURITY AND ADMINISTRATION	-----																													
DRUM OVERPACKING, STAGING, INVENTORY, SAMPLING	-----																													
COMPATIBILITY ANALYSIS AND COMPOSITING	-----																													
BULKING COMPATIBLES	-----																													
TRANSPORTATION AND DISPOSAL OF WASTES	-----																													
TANK EXCAVATION	-----																													
DECONTAMINATION OF TANKS AND BUILDING	-----																													

TOTAL DURATION = 30 DAYS

7.1.2. Sample Stream Sediments

The stream sediments will be sampled upstream and downstream of the discharge pipe from the Enginuity facility and analyzed for cyanide, metals and PCBs. If results indicate hazardous levels of the above parameters are present, more extensive sampling will be conducted to determine the extent of contamination and additional funding may be requested for sediment removal actions.

7.1.3. Inventory Lab Discarded Chemicals

All chemicals in the laboratory and junk pile will be inventoried and unknown chemicals will be sampled.

7.1.4. Test Wastes for Compatibility and Disposal Parameters

All samples will be tested for compatibility on-site. Compatible samples will be composited and sent to disposal/treatment facilities for acceptance. All composite samples will also be sent to a commercial lab for confirmation of disposal parameter results.

7.1.5. Overpack and Stage Corroded Drums

Approximately 40 drums of cyanide sludge will require overpacking due to their deteriorating condition.

7.1.6. Bulk Compatibles

The cyanide solutions, basic liquids, and PCB contaminated oil, contained in the tanks will be pumped into separate tank trucks. Cyanide sludge will be drummed and staged in preparation for disposal. Acid solutions will also be drummed. Lab chemicals and liquids in drums found to be compatible with the vat contents will be composited in vats in preparation for disposal.

7.1.7. Dispose of Drums, Bulk Liquids and Solids

All drums of solids and liquids and all tanked liquids will be transported to appropriate facilities for treatment or disposal. Acidic and basic liquids will be treated at Chem-Clear Inc. in Chicago, Illinois. Cyanide liquids and solids will be treated at CyanoKEM in Detroit, Michigan. Metal solids will be treated at EWC in Inkster, Michigan. Lab chemicals not composited with bulk liquids will be lab-packed into fiber or plastic drums and removed for incineration, along with flammable liquids, to ThermalKEM in Rock Hill, South Carolina. The PCB-contaminated oil will be sent to the SCA incinerator in Chicago.

7.1.8. Excavate PCB Tanker/Monitoring/Disposal

The buried PCB tanker will be excavated. Soil samples for PCB contamination will be collected. If significant PCB soil contamination is determined, monitoring wells will be installed in the vicinity of the tanker to determine if groundwater contamination has occurred. If PCB groundwater and/or soil contamination is detected, remedial actions will need to be addressed and additional funding may be requested. The tanker will be decontaminated, disabled and left on-site.

7.1.9. Decontaminate Tanks and Building

Floors, walls, and tanks will be decontaminated and the resultant water disposed of as hazardous waste liquid at CyanoKEM in Detroit, Michigan.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

INDIANAPOLIS

OFFICE MEMORANDUM

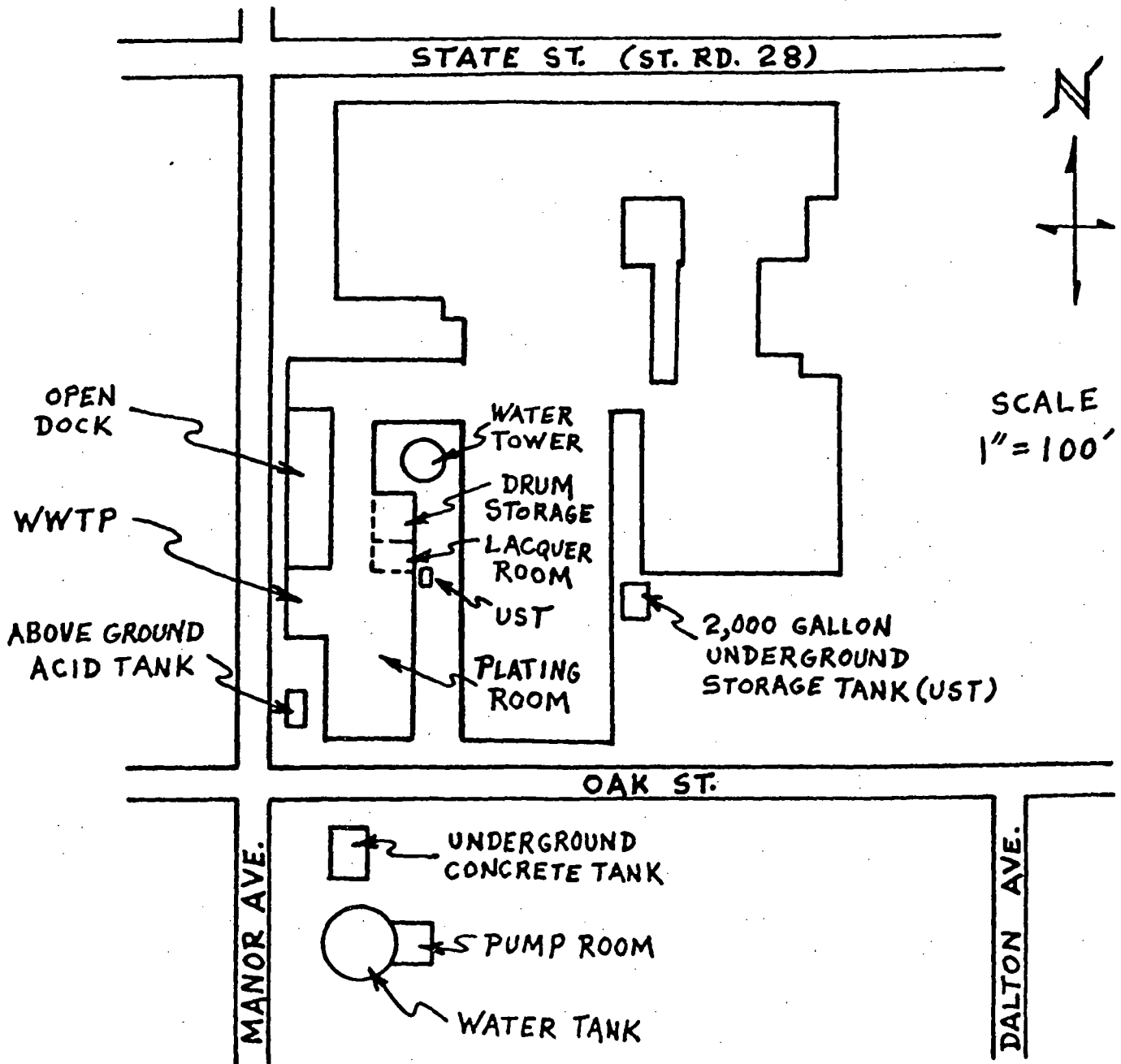
DATE: August 29, 1989

TO: RCRA File IB2

THRU: Dennis M. Zawodni *DMZ*

FROM: Michael E. Sickels *MES*
Enforcement Section *8/29/89*

SUBJECT: Enginuity, Inc. CDI of August 24, 1989
Locational Map



ATTACHMENT B
ON-SCENE COORDINATOR'S REPORT, CERCLA REMOVAL ACTION,
ENGINEUITY, INC.,
BY U.S. EPA
(23 Sheets)

1e/11on

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE:

DEC 23 1990

SUBJECT: ON-SCENE COORDINATOR'S REPORT - Removal Action at the
Enginuity, Inc. Site, (location) Albany, Indiana, ID #EL

FROM: Robert J. Bowden, Chief
Emergency and Enforcement Response Branch, 5HS-12

TO: Stephen J. Luftig, Director
Emergency Response Division, OS-210

THRU: Norman R. Niedergang, Division Director
Office of Superfund, 5HS-11

Attached please find the On-Scene Coordinator's Report for the removal action conducted at the Enginuity, Inc. site located in Albany, Indiana. The report follows the format outlined in the National Contingency Plan (NCP), Section 300.165. This removal began on June 19, 1989 and was completed on June 11, 1990. The OSC for this removal action was Ken Theisen.

The site poses an immediate threat to human health and the environment. The action was taken to mitigate threats posed by: large amounts of solid and liquid cyanide, acids, bases and various laboratory chemicals all stored in an abandoned facility.

Costs under the control of the On-Scene Coordinator totaled \$572,554.67 of which \$462,238.95 were for the Emergency Response Cleanup Services (ERCS) contractor.

Any indication in this OSC Report of specific costs incurred at the site only an approximation, subject to audit and final definitization by the U.S. EPA. The OSC Report is not a final reconciliation of the costs associated with a particular site.

Portions of the OSC Report appendices may contain confidential business or enforcement-sensitive information and must be reviewed by the Office of Regional Counsel prior to release to the public.

This site is not on the National Priorities List.

Attachment

cc: C. Wellish, IDEM, W/OSC Report
T. Johnson, U.S. EPA, OERR, OS-210, w/OSC Report

XMT 12-11-91

12-11-91

JD 12-23-91

DRK
Acting OSF
12/23/91

ON-SCENE COORDINATOR'S REPORT

CERCLA REMOVAL ACTION

SITE NAME

CITY, STATE

SITE ID# EL

DELIVERY ORDER NO. 7360-05-031

Removal Dates: June 19, 1989 - June 11, 1990

**Emergency and Enforcement Response Branch
Office of Superfund
Waste Management Division
Region V
United States Environmental Protection Agency**

EXECUTIVE SUMMARY

The Emergency Response Section of the U.S. Environmental Protection Agency (U.S. EPA), Region V, initiated a removal at the Enginuity, Incorporated site in Albany, Indiana on June 19, 1989. This removal mitigated the threats to human health and the environment typically posed by an abandoned electroplating operation where acids, caustics, and cyanides are stored in deteriorating vats and drums. The two primary chemical threats posed by the site were: (1) contact with acids, caustics, metals, or poisons, and (2) an accidental mixing of acid with cyanide to form hydrocyanic gas. These threats were compounded by the fact that public access to the plating wastes was not restricted, since other parts of the Enginuity building were used by operating facilities.

Under U.S. EPA guidance, the Emergency Response Cleanup Services (ERCS) Contractor, Maecorp, Incorporated, removed approximately 36,000 gallons of liquid waste; over 40 tons of solid waste; and two drums of decontaminated outer protective clothing. No hazardous wastes were landfilled; they were either treated, incinerated, or fuels blended. One rolloff box of noncontaminated disposable protective equipment and crushed drums, disposed as special waste, was landfilled. Nonhazardous metal scrap was recycled.

Kenneth Theisen, the U.S. EPA On-Scene Coordinator (OSC) for the project, designed the removal to first address the threat of hydrocyanic gas generation by targeting cyanide and acids for immediate containerization and removal. Following gross waste removal, contaminated building surfaces were power washed using a sodium hypochlorite solution.

The removal was completed on June 11, 1990 at a cost under control of the On-Scene Coordinator (OSC) of \$572,554.67, which includes \$462,238.95 for the ERCS contractor.

1.0 SUMMARY OF EVENTS

1.1 INITIAL SITUATION

The Enginuity, Incorporated, (Enginuity) site is an abandoned electroplating facility located at 501 East State Street in Albany, Delaware County, Indiana (Figure 1). The site is bordered to the north by State Street, to the east by Parker Avenue, to the south by Oak Street, and to the west by Manor Avenue (Figure 2). The facility is centrally located in the city of Albany and is bordered by residences on all sides. The nearest residence is approximately 100 feet from the facility.

The building that housed Enginuity's plating operations is a complex of buildings; that is, a central building with many annexes. At the time of the removal, three other companies operated a metal stamping facility, a cardboard box manufacturing process, and a paper company in rooms adjacent to the plating rooms.

Site topography is generally flat. Albany lies within the Mississinewa River drainage basin, which drains the northeastern section of the county. The nearest waterway is Halfway Creek, which flows through a residential area approximately 1000 feet southwest of the site.

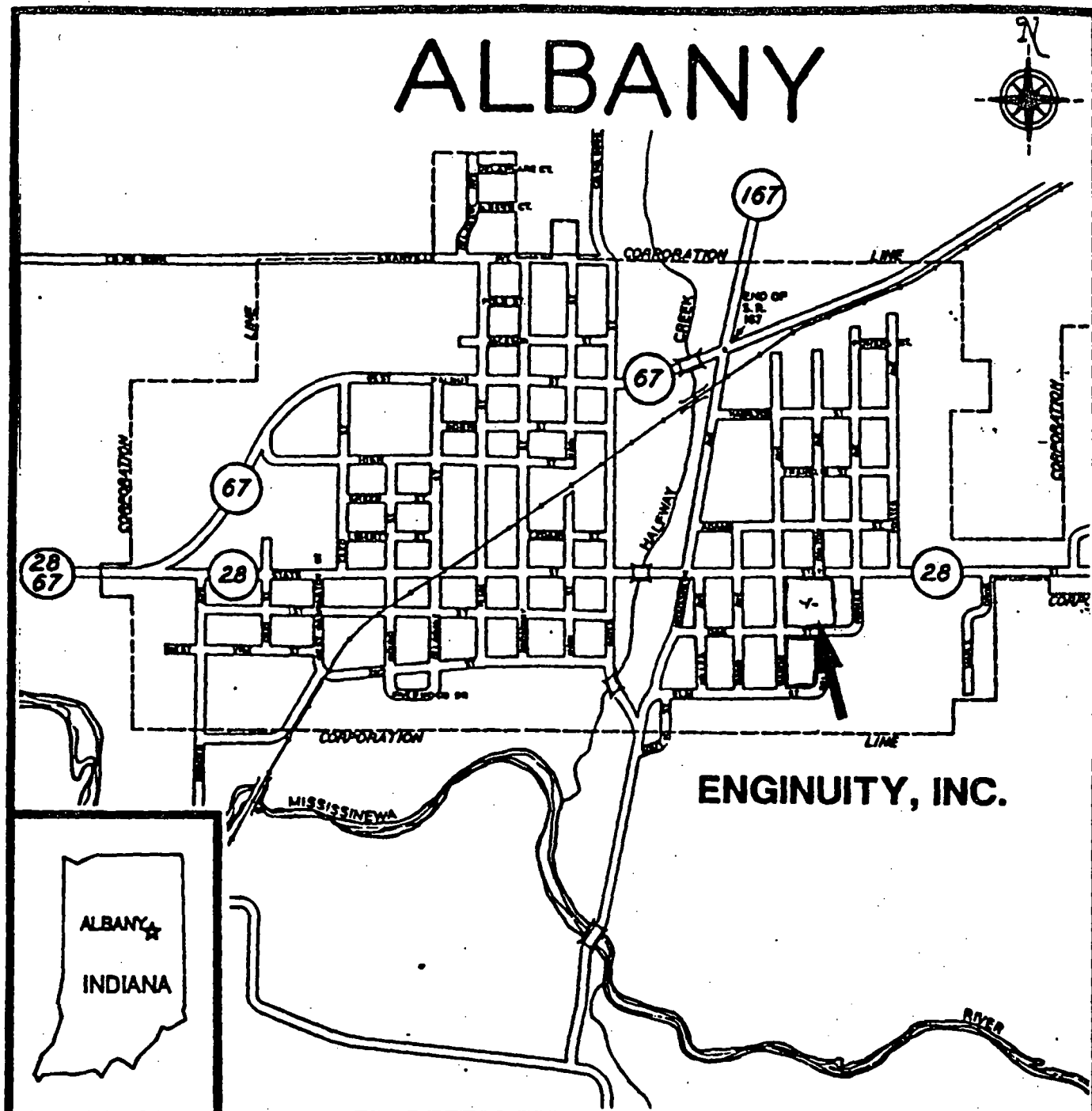
The surficial geology of Delaware County consists of a relatively impermeable layer of glacial till and silt which limits ground water recharge. Underlying this till is a layer of glacial drift ranging in thickness of 0 to 300 feet. Within the drift, the principal aquifer consists of sand and gravel up to 80 feet thick, which is used for domestic and industrial purposes. A bedrock aquifer of dolomite underlies the entire county and is used for domestic, industrial, and municipal purposes.

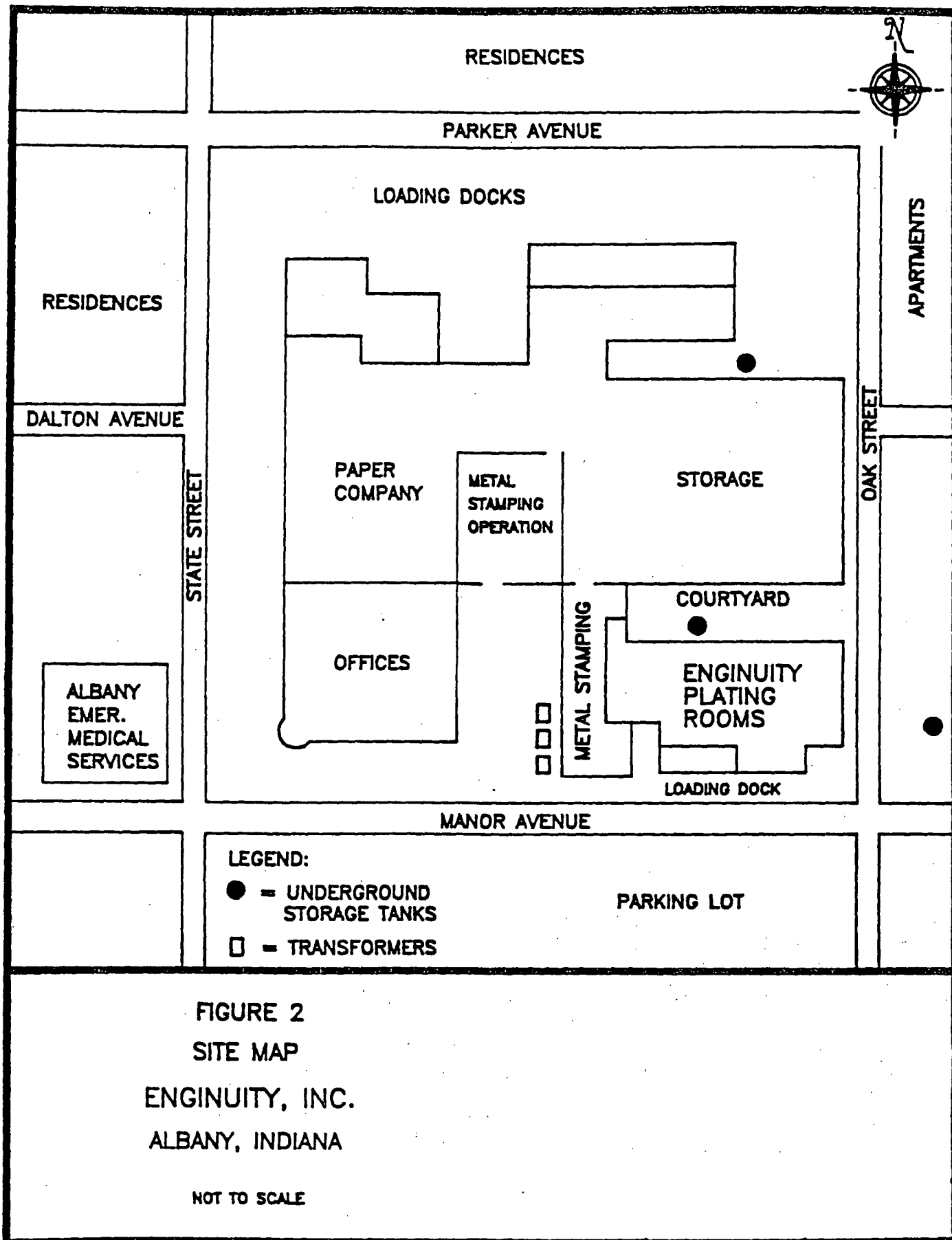
1.2 SITE HISTORY

The Enginuity facility is known locally as the McCormick Brothers Building, named after the original owners. The facility has been intermittently used for plating operations since the 1930s. On July 5, 1978, KDM Investment Corporation purchased the facility from the McCormick Brothers, and Albany Plating Works, Incorporated became the operator. In 1981, Mr. Dennis J. McCarthy, president of Enginuity, Inc., became the operator of the facility.

On August 12, 1982, the facility was inspected by representatives of the Indiana Stream Pollution Control Board who observed a discharge of zinc and chromium electroplating wastewater into Halfway Creek.

On September 1, 1982, Enginuity, Inc. became owner of the facility. Operations ceased some time in 1983, restarting again in 1984, when





D&H manufacturers became operators of the facility.

During a compliance inspection on December 5, 1985, the Indiana State Board of Health (now the Indiana Department of Environmental Management, or IDEM) collected several samples from tanks in the facility. Analytical results indicated the presence of high concentrations of cyanide (up to 190,000 parts per million, or ppm) in several of the tanks. On April 4, 1986, D&H was ordered to evacuate by Enginuity, Inc. Hazardous wastes remained on the premises.

On March 5, 1987, Bruce Kizer of the IDEM Office of Solid and Hazardous Waste Management (OSHWM) conducted an inspection of the facility. OSHWM subsequently determined that Enginuity was in violation of Indiana Code 13-7, the Environmental Management Act, and the Hazardous Waste Management Rules. These regulations require that hazardous materials storage facilities adopt certain protocols, including a closure plan, which Enginuity did not have in place.

In October 1988, the IDEM requested that the United States Environmental Protection Agency (U.S. EPA) conduct a site assessment (SA). On October 19, 1988, On-Scene Coordinator (OSC) Rich Rupert and members of the Technical Assistance Team (TAT) conducted a SA and documented the presence of the following wastes:

1. Forty drums of cyanide waste;
2. Several drums and vats of lacquer waste inside a small room;
3. A 5,500 gallon open-top tank containing an 8% cyanide solution; (readings of hydrogen cyanide gas at 2 ppm were detected above this tank using a Draeger detector tube);
4. An underground cistern containing approximately 2,700 gallons of suspected cyanide solution;
5. A second underground cistern, containing approximately 2,700 gallons of liquid, reported by the PRP to be non-cyanide waste;
6. A tank containing acid, which had leaked one to three gallons of liquid onto the floor;
7. An open vat containing approximately 2,000 gallons of cyanide metal sludge;
8. A series of severely corroded plating vats containing varying volumes of liquids with pH ranging from 6 to 12;

9. A laboratory facility containing over 50 chemical reagent bottles of varying volumes; and
10. An underground storage tank containing an estimated 2,000 to 5,000 gallons of potential PCB-contaminated oil, positioned east of the building near a loading dock.

Due to the immediate threat posed by the leaking acid tank in proximity to an underground cistern of cyanide solution, on October 19, 1988 the U.S. EPA ordered the PRP, Mr. McCarthy, to contain the acid. On October 20, 1988, under direction and assistance of the U.S. EPA, Mr. McCarthy pumped approximately 600 gallons of acid out of the leaking tank into drums for containment. Acid which had already spilled onto the concrete floor was neutralized with a basic solution and water.

Currently, the building is owned by Enginuity of which Dennis McCarthy is president. Mr. McCarthy's sons, Mike and Kelly McCarthy, operate the stamping operation while Enginuity leases part of the building to a cardboard box manufacturer.

1.3 THREATS

Substances identified and site conditions observed during the SA posed significant threats to human health and the environment, as outlined in Section 300.65(b)(2) of the then-effective National Contingency Plan. These threats included:

1. Actual or potential exposure to hazardous substances by nearby populations, animals, or food chain.

Laboratory analysis performed for the IDEM and U.S. EPA documented the presence of hazardous wastes at the site. The plating portion of the building, where these wastes were stored, was not secured by locks or barricades. Workers in other portions of the building could enter the plating portion of the building without obstruction and potentially be exposed to the hazardous substances there.

During a 1982 inspection of the facility by the Indiana Stream Pollution Board, a discharge of zinc and chromium electroplating waste water from the facility was observed entering Halfway Creek. This observation documented a direct route to the environment of potentially toxic substances. Zinc and trivalent chromium are chronically toxic to aquatic life at 47 parts per billion (ppb) and 44 ppb, respectively. Hexavalent chromium is chronically toxic at 0.29 ppb. Hexavalent chromium is an irritant and corrosive to humans if ingested, inhaled, or absorbed through the skin, and inhalation exposure increases the risk of lung cancer.

2. Hazardous substances in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release.

The presence of thousands of gallons of cyanide solutions, cyanide waste solids, acids, and bases in open vats posed a threat of release. Field tests of pH levels in the various containers demonstrated a pH range of 0 to 12. Acids can cause inflammation of the respiratory system, choking, and burning of the eyes and skin. Strong bases irritate mucous membranes and burn eyes and skin. Cyanide and acids, if combined, can form hydrogen cyanide (HCN) gas, capable of killing humans at air concentrations as low as 50 ppm.

In addition, the presence of a buried railroad tank car potentially containing several thousand gallons of PCB-contaminated oil posed a threat. It was not known at the time of the SA whether the tank was leaking.

3. Weather conditions that may cause hazardous substances or contaminants to migrate or be released.

Inspection of the plating building revealed several large holes in the ceiling above an open-top plating tank containing acid solution and an open-top vat containing approximately 8% cyanide solution. Rain water leaking through the ceiling could have caused the acid solution to overflow.

The presence of many floor drains in this building leading to unknown discharge points were a potential avenue of contaminant migration off-site.

1.4 ATTEMPTS TO OBTAIN A RESPONSE FROM RESPONSIBLE PARTIES

Prior to 1978 this facility was operated by McCormick Brothers Corporation. On July 5, 1978 KDM Investment Corporation purchased the facility and Albany Plating Work Inc. became the operator. Mr. Dennis J. McCarthy is the President of Enginuity Plating and became the owner of the facility by mortgage foreclosure on September 1, 1982. In February of 1984, D & H Manufacturers, Inc. (D & H), began operating the facility with Ms. Joyce Walker as President. Enginuity Inc., retained ownership. D & H operated the plating facility until April 4, 1986, when they were ordered to be evacuated by Enginuity Inc. The plating facility has not operated since that time.

In conversations with the Indiana Department of Environmental Management (IDEM) it appears that the Environmental Investigations Division is pursuing criminal charges against Enginuity Plating.

A 106 Unilateral Administrative Order was issued to those identified as potentially responsible parties. The potential of the responsible parties to undertake the clean-up was perceived as poor and therefore the U.S. EPA conducted the removal.

1.5 ACTIONS TAKEN

An Action Memorandum approving a site spending ceiling of \$589,100 was approved on May 12, 1989. The U.S. EPA, represented by OSC Ken Theisen, commenced a removal action at the Enginuity site on June 19, 1989. The removal was conducted by Zone III Emergency Response Cleanup Services (ERCS) Contractor, Maecorp, Incorporated, of Grand Rapids, Michigan. The ERCS Delivery Order (DO) originally approved \$250,000; on July 17, 1989, the U.S. EPA approved an additional \$123,400, increasing the DO to \$373,400. The U.S. EPA granted a second ERCS DO increase of \$117,000 on August 25, 1989. At the Request of OSC Theisen, Maecorp mobilized a Response Manager, chemist, project control specialist, and a varying number of technicians to initiate the removal action.

The following sections detail the removal activities. A timeline displaying the sequence of these activities is included in Attachment A. Figure 3 depicts the site as it appeared before work began on June 19, 1989.

1.5.1 Site Mobilization

Initial equipment setup began on June 19, 1989, and included mobilization of an office trailer, decontamination trailer, and other equipment; installation of electric and telephone service; setup of decontamination line; and establishment of support zone, decontamination zone, and hot zone.

1.5.2 Site Safety and Security

From June 21 through June 22, 1989, the Albany Fire Department temporarily provided nighttime security. Beginning on June 23, 1989, Talbott Detective Agency was subcontracted by Maecorp to provide site security during non-working hours and demobilization periods.

The TAT developed a site safety plan which was approved by OSC Theisen on June 19, 1989. On June 27, 1989, Maecorp Health and Safety Officer Dave Risi visited the site and reviewed site safety practices and the site safety plan. Mr. Risi suggested minor changes to the safety plan, and a revised site safety plan was adopted on June 29.

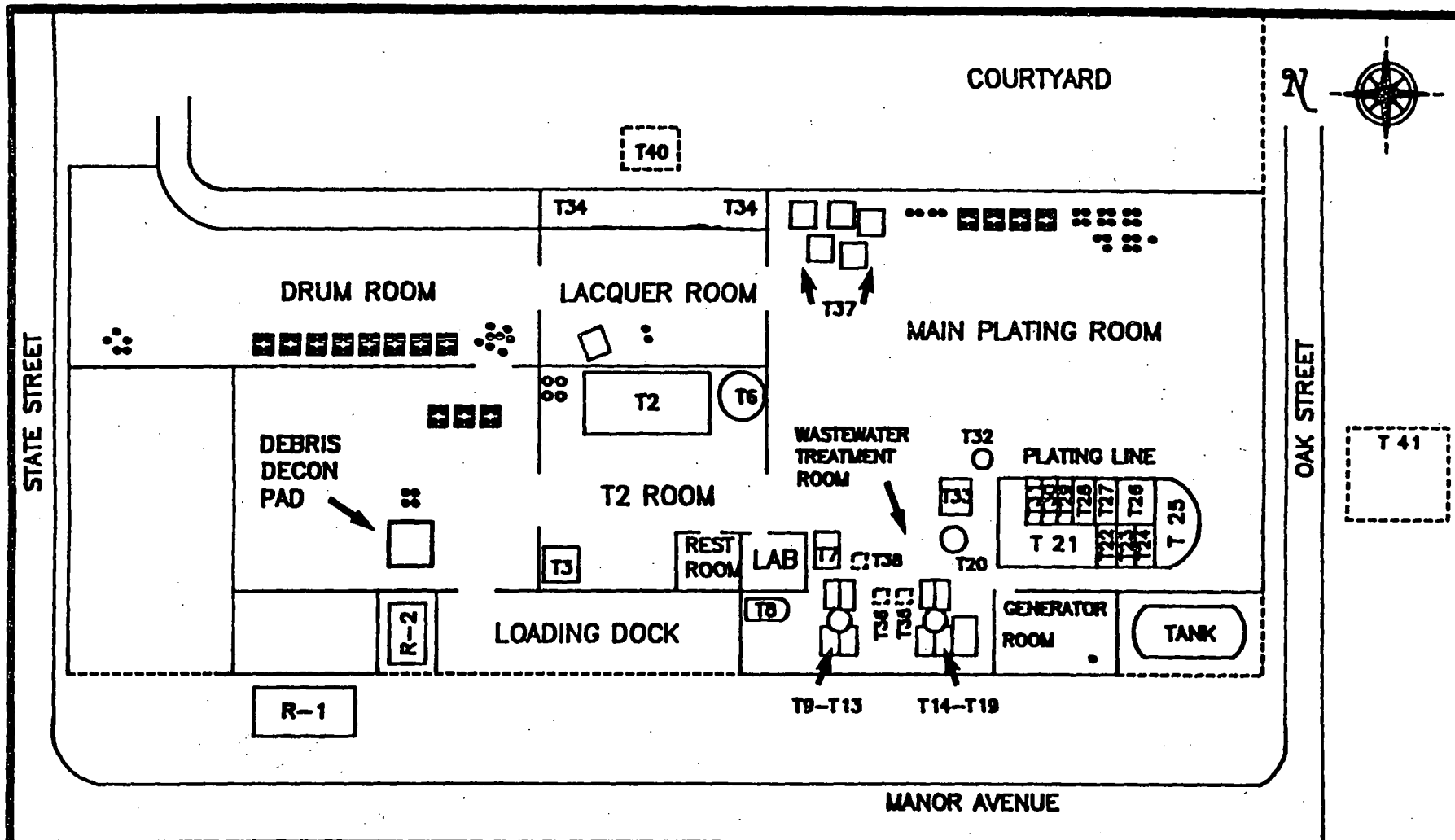


FIGURE 3
SITE MAP, PRE-WORK
 06-19-89
 ENGINUITY, INC.
 ALBANY, INDIANA
 NOT TO SCALE

LEGEND

- = DRUMS
- = PALLET OF DRUMS
- T# = TANK/VAT NUMBER
- R# = ROLLOFF NUMBER
- = UST

An air monitoring program began on June 19, 1989. Monitoring was conducted with a photoionization detector, a combustible gas indicator, a HCN Monitox meter and HCN Draeger tubes. A log of TAT air monitoring results is included in the OSC Appendices. During gross cyanide waste removal and decontamination activities, Maecorp personnel conducted continuous personal air monitoring using HCN Monitox units.

1.5.3 Drum Sampling and Compatibility Testing

Sampling and compatibility testing were conducted from June 21 through July 10, 1989. Maecorp personnel collected samples and completed drum logs. The Maecorp chemist performed onsite compatibility tests, and TAT conducted a ten percent quality control check on the chemist's methods. The Maecorp chemist and TAT collaborated on the determination of waste streams. Compatibilities of the tentative waste streams were then tested through bench-scale compositing of wastes, resulting in composite samples that were ready for disposal acceptance analysis. The Enginuity site generated a total of 28 waste streams.

1.5.4 Temporary Demobilization and Remobilization

On June 30, 1989, all Maecorp personnel were demobilized for the July 4th holiday. Personnel remobed and the removal continued on July 5, 1989. On July 18, 1989, personnel and equipment were again demobilized until August 2. This demobilization period was necessary for acquiring acceptance of waste streams. During this period, it proved more economical to leave the office trailer, decon trailer, bobcat loader, lab hood, and poly storage tanks on site. During each demobilization period, site security was maintained.

On August 2, 1989, site work resumed. By August 25, 1989, all debris had been cleared; all contaminated building surfaces had been decontaminated; and the few remaining waste streams which still lacked disposal acceptance were containerized, labeled, and staged on site. On that date, all equipment and personnel were demobilized. Following the August 25, 1989 demobe, personnel and equipment were mobilized to the site on an as-needed basis. Between September 19 and 21, 1989, the OSC, TAT and Maecorp remobilized in order to dispose of six additional waste streams. The OSC, TAT, and Maecorp returned to the site on December 4, 1989, to dispose of sludges from tank T-41. Finally, the TAT returned to the site on June 11, 1990 to oversee final disposal of two drums of decontaminated personal protective equipment (PPE).

1.5.5 Bulking of Liquids and Solids

Beginning June 29, 1989, liquids from large plating vats were pumped to poly tanks for temporary storage. The solids from these vats were then transferred to 55-gallon drums. By July 14, 1989, the first seven waste streams were containerized and ready for shipment. The seven streams amounted to 6,250 gallons of cyanide liquid, 7,580 gallons of cyanide solids and sludges, and 275 gallons of flammable liquid.

On August 21, 1989, 1,200 gallons of acid liquid (pH = 0) were bulked from drums and vats into a poly tank. The transporter, Heritage Environmental Services, requested that these acids be combined before they entered the tank truck.

1.5.6 Decontamination and Disposal of Plating Vats and Debris

At the time of initial mobilization, the plating rooms were strewn with large amounts of debris, including metal pipes, tanks, vats, wooden debris, and large amounts of miscellaneous trash. Beginning on June 28, 1989, visibly contaminated debris was decontaminated on site, using the following method: debris was gathered into an area enclosed by a concrete berm, where it was sprayed with a sodium hypochlorite (bleach) solution and allowed to soak, allowing the cyanide to break down and producing chlorine gas as a byproduct. The debris was then high-pressure rinsed and spot-checked for residual cyanide. Spent sodium hypochlorite/cyanide solution and rinsate were collected in poly tanks. Decontaminated metal debris was then temporarily stored in rolloff boxes. This activity was conducted in full Level B protective clothing and was isolated from other site activity.

Dismantling and decontamination of plating vats began on July 10, 1989. The decontamination method for the vats was identical to the one described above. Wherever possible, onsite treatment was the chosen method for removal of cyanide-contaminated solids, because it was preferable to facing the uncertainties and expenses of complying with Land Ban disposal regulations.

1.5.7 Drum Crushing

From July 5 to July 7, empty drums were crushed with a drum crusher and collected in rolloff box R-1, reserved for nonhazardous personal protective clothing and empty drums.

1.5.8 Disposal Summary

Table 1 summarizes hazardous and special waste disposal. The table describes each category of waste, waste quantity, ship dates, disposal method, and facility used. In total, U.S. EPA removed

TABLE 1
WASTE DISPOSAL SUMMARY
Enginuity, Inc.
Albany, IN
(6/19/89 - 6/11/90)

Waste Type	Quantity	Date*	Manifest Number	Disposal Method	Facility
Waste cyanide solution, n.o.s.	2550 G	7/17	MI 1212543	Treatment	CyanoKEM, Inc., Detroit, MI
	4001 G	7/18	MI 1212546	Treatment	CyanoKEM, Inc., Detroit, MI
	<u>2200 G</u>	8/25	INA 0157331	Treatment	Heritage Environmental Services, Inpls. IN
	8751 G				
Waste cyanide solid, n.o.s.	64 D	7/18	MI 1212544	Treatment	CyanoKEM, Inc., Detroit, MI
	72 D	7/18	MI 1212545	Treatment	CyanoKEM, Inc., Detroit, MI
	11 D	8/18	INA 0157338	Treatment	Heritage Environmental Services, Inpls. IN
	<u>34 D</u>	9/20	MI 1212550	Treatment	CyanoKEM, Inc., Detroit, MI
	185 D				
Waste flammable liquid, n.o.s.	275 G	7/18	MI 1212547	Fuel blend	Environmental Waste Control, Inkster, MI
	2000 G	8/08	INE200000293-06	Fuel blend	Systech, Inc., Greencastle, IN
	<u>550 G</u>	8/22	MI 1212548	Fuel blend	Environmental Waste Control, Inkster, MI
	2825 G				
Waste flammable solid, n.o.s.	1900 LB	9/21	INE200000293-19	Incineration	ThermalKEM, Inc., Rock Hill, SC
Hazardous waste liquid, n.o.s.	5000 G	9/19	IL 4122149	Treatment	Clean Harbors, Inc., Chicago, IL
	5000 G	9/20	IL 4122150	Treatment	Clean Harbors, Inc., Chicago, IL
	4600 G	9/21	IL 4122151	Treatment	Clean Harbors, Inc., Chicago, IL
	930 G	9/20	INA 0157333	Treatment	Heritage Environmental Services, Inpls. IN
	4800 G	10/25	MI 1343506	Fuel Blend	Environmental Waste Control, Inkster, MI
	<u>1100 G</u>	12/04	MI 1779686	Fuel Blend	Environmental Waste Control, Inkster, MI
	21430 G				
Hazardous waste solid n.o.s.	9 D	8/18	INA 0157338	Treatment	Heritage Environmental Services, Inpls. IN
	10 D	9/20	MI 1212550	Treatment	CyanoKEM, Inc., Detroit, MI
	37 D	9/21	INE200000293-19	Incineration	ThermalKEM, Inc., Rock Hill, SC
	<u>2 D</u>	6/11/90	INE200000293-24	Incineration	ThermalKEM, Inc., Rock Hill, SC
	58 D				
Waste acid liquid, n.o.s.	1200 G	8/22	INA 0157330	Treatment	Heritage Environmental Services, Inpls. IN

* All dates are in 1989 except where noted.

WASTE DISPOSAL SUMMARY TABLE (continued)
 Enginuity, Inc.
 Albany, IN
 (6/19/89 - 6/11/90)

Waste Type	Quantity	Date*	Manifest Number	Disposal Method	Facility
Oxidizer, corrosive solid, n.o.s.	1 D	8/21	INA 0157339	Treatment	Heritage Environmental Services, Inpls. IN
Waste corrosive liquid, n.o.s.	1200 G	8/9	MI 1212552	Treatment	CyanoKEM, Inc., Detroit, MI
	500 G	8/14	MI 1212549	Treatment	Environmental Waste Control, Inkster, MI
	55 G	8/21	INA 0157339	Treatment	Heritage Environmental Services, Inpls. IN
	55 G	8/21	INA 0189202	Treatment	Heritage Environmental Services, Inpls. IN
	1755 G				
Lab packs	4 D	9/21	INE200000293-19	Incineration	ThermalKEM, Inc., Rock Hill, SC
Nitric acid, fuming	55 G	8/21	INA 0157339	Treatment	Heritage Environmental Services, Inpls. IN
Chromic acid solution	55 G	8/21	INA 0157339	Treatment	Heritage Environmental Services, Inpls. IN
Non hazardous solid waste	40 cu yd	9/21	CWMA 342009	Landfill	Chemical Waste Management, Emelle, AL

* All dates are in 1989 except where noted.

approximately 36,000 gallons of hazardous liquid waste (including 14,600 gallons of decontamination rinsate); over 40 tons of hazardous solid waste; and two drums of decontaminated outer protective clothing. No hazardous wastes were landfilled; they were either treated, incinerated, or fuels blended. One rolloff box of noncontaminated disposable protective equipment and crushed drums, disposed as special waste, was landfilled.

Nonhazardous and decontaminated debris was periodically disposed of at a local sanitary landfill. A total of seven twenty-cubic yard rolloff boxes of this material was sent to a local sanitary landfill. Nonhazardous metal scrap was periodically transported off site by a local salvager. The salvager transported a total of approximately eight rolloff boxes of scrap off site for recycling at no cost to the federal government.

1.5.9 Final Decontamination and Demobilization

Following the August 25, 1989 demobe, personnel and equipment were mobilized to the site on an as-needed basis. On September 19, 20, and 21, 1989, Maecorp mobilized a Response Manager, a clerk, one technician, a pickup truck, a box truck, a poly tank, and two pumps to dispose of six waste streams. The contents of T41, an underground storage tank located south of Oak Street, across the street from the main building, was also pumped into drums. The OSC, TAT, and Maecorp returned to the site on December 4, 1989, to dispose of sludges from tank T-41. Final site work occurred on June 11, 1990, when TAT mobilized to oversee activities as two drums of decontaminated PPE were transported off site for incineration.

1.6 COMMUNITY RELATIONS

The U.S. EPA prepared and mailed a Fact Sheet detailing removal activities to local officials and residents in September 1989. The U.S. EPA also developed a Community Relations Plan for the site. Throughout the removal, OSC Theisen informed local officials and the press of work progress. Local press clippings are included in the OSC Appendices. Mr. Max Werking, of the Delaware County Health Department, visited the site periodically to keep abreast of site activities in order to answer citizen phone calls that reached the county government.

1.7 COST SUMMARY

Maecorp was the prime ERCS contractor for the Enginuity site. Site activities commenced on June 19, 1989, and concluded on June 11, 1990. Table 2 summarizes daily expenditures for services provided by the cleanup contractor. As of June 12, 1990, total expenditures submitted by Maecorp totaled \$ 462,238.95. Table 3 provides a

TABLE 2

SUMMARY OF DAILY ERCS CONTRACTOR EXPENDITURES
 ENGINUITY, INC., ALBANY, INDIANA
 JUNE 19, 1989 - JUNE 11, 1990

Date	Daily Total	Date	Daily Total
06/19/89	\$ 9,665.23	07/21/89	\$ 854.36
06/20/89	4,244.35	07/22/89	572.43
06/21/89	3,945.54	07/23/89	478.87
06/22/89	3,682.70	07/24/89	218.42
06/23/89	3,039.04	07/25/89	486.72
06/24/89	218.40	07/26/89	1,201.81
06/25/89	218.40	07/27/89	239.21
06/26/89	13,745.00	07/28/89	533.71
06/27/89	4,152.88	07/29/89	526.60
06/28/89	5,074.84	07/30/89	442.24
06/29/89	6,766.60	07/31/89	218.40
06/30/89	9,404.87		
07/01/89	270.07	08/01/89	253.91
07/02/89	218.40	08/02/89	8,027.86
07/03/89	551.55	08/03/89	5,109.17
07/04/89	218.40	08/04/89	3,973.90
07/05/89	7,575.48	08/05/89	1,237.44
07/06/89	7,147.83	08/06/89	1,087.92
07/07/89	8,338.11	08/07/89	3,933.31
07/08/89	520.44	08/08/89	4,759.90
07/09/89	843.16	08/09/89	10,160.02
07/10/89	7,391.55	08/10/89	4,921.51
07/11/89	6,136.49	08/11/89	4,473.86
07/12/89	7,698.85	08/12/89	970.66
07/13/89	6,002.48	08/13/89	866.91
07/14/89	4,765.77	08/14/89	3,614.95
07/15/89	304.08	08/15/89	3,353.30
07/16/89	262.02	08/16/89	3,506.33
07/17/89	14,607.66	08/17/89	3,230.38
07/18/89	123,943.58	08/18/89	8,148.90
07/19/89	766.49	08/19/89	1,049.37
07/20/89	1,066.08**	08/20/89	771.59

* Based on estimated costs on U.S. EPA 1900-55 forms as of 06/12/90 (includes await bills).

** U.S. EPA was credited on these dates for costs await billed on earlier dates.

TABLE 2 (continued)

SUMMARY OF DAILY ERCS CONTRACTOR EXPENDITURES
 ENGINEUNITY, INC., ALBANY, INDIANA
 JUNE 19, 1989 - JUNE 11, 1990

Date	Daily Total	Date	Daily Total
08/21/89	-7,266.58**	09/15/89	4.95
08/22/89	6,930.61	09/16/89	4.95
08/23/89	3,016.07	09/17/89	4.95
08/24/89	6,399.39	09/18/89	4.95
08/25/89	11,946.58	09/19/89	8,065.78
08/26/89	40.46	09/20/89	35,036.54
08/27/89	33.34	09/21/89	42,710.61
08/28/89	1,715.37	09/22/89	1,292.14
08/29/89	-2,637.85**	09/25/89	156.00
		09/26/89	47.25**
09/01/89	25.32	09/29/89	483.21
09/02/89	4.95		
09/03/89	4.95	10/25/89	11,650.52
09/04/89	4.95	10/27/89	3,513.57**
09/05/89	3.97	10/28/89	1,133.52**
09/08/89	4.95	12/04/89	1,701.26**
09/09/89	4.95	06/11/90	-897.91**
09/10/89	4.95	06/12/90	-4,987.44**
09/11/89	4.95		
09/12/89	62.47	TOTAL	\$ 462,238.95

* Based on estimated costs on U.S. EPA 1900-55 forms as of 06/12/90 (includes await bills).

** U.S. EPA was credited on these dates for costs await billed on earlier dates.

TABLE 3
SUMMARY OF ERCS CONTRACTOR EXPENDITURES
BY SERVICE CATEGORY
ENGINEUTY, INC., ALBANY, INDIANA
JUNE 19, 1989 - JUNE 11, 1990

Service	Amount
Labor and Subsistence	\$ 110,835.20
Equipment	28,352.23
Unit Rate Materials	-85.97
At Cost Materials	11,951.47
Subcontractors (Final Bills)	311,184.07
Subcontractors (Await Bills)	1.95
TOTAL	\$ 462,238.95

Costs are based on costs from U.S. EPA 1900-55 forms as of 6-12-90. Costs shown are an approximation, subject to audit and final definitization by the U.S. EPA.

TABLE 4
SUMMARY OF REMOVAL COSTS *
ENGINEUNITY, INC., ALBANY, INDIANA
JUNE 19, 1989 - JUNE 11, 1990

Organization	Amount
ERCS Contractor (1)	\$ 462,238.95
U.S. EPA (2)	48,023.50
TAT (3)	64,378.76
TOTAL	\$ 572,554.67

(1) Based on costs from U.S. EPA 1900-55 forms as of 6-12-90. Includes await bill.

(2) Based on estimated U.S. EPA costs on Daily Cost Summary, as of 6-12-90. Includes direct and indirect costs.

(3) Based on TAT financial report (TDD# 5-8905-18) as of 10-26-90.

* Any indication of specific costs incurred at the site is an approximation, subject to audit and final definitization by the U.S. EPA. The OSC Report is not intended to be a final reconciliation of the costs associated with a particular site.

breakdown of the ERCS expenditures into five major categories of labor, equipment, materials, and subcontractors. In addition to the ERCS contractor, costs were incurred by the TAT and U.S. EPA. Total cleanup costs, which are approximately \$ 572,554.67, are represented in Table 4. The site delivery order number is 7360-05-031, and the TDD number is 5-8905-18.

2.0 EFFECTIVENESS OF REMOVAL ACTION

The removal action at Enginuity effectively mitigated the immediate threats to human health and the environment posed by hazardous wastes at the site. The OSC designed site activities to first address the cyanide wastes. As soon as the major cyanide-bearing wastes were transported off site, the threat of HCN gas generation was greatly reduced. All hazardous wastes were removed from the areas pictured in Figure 3, and contaminated building surfaces were decontaminated.

2.1 RESPONSIBLE PARTY

Refer to Section 1.4.

2.2 STATE AND LOCAL AGENCIES

The Town of Albany cooperated with the removal by barricading Manor Street in order to provide space for the office trailer, decontamination trailer, and other equipment. Max Werking, of the Delaware County Health Department, visited the site on several occasions to be briefed about site activities, in order to answer phone inquiries from local citizens. Mr. Jim Clevenger, of the Albany Emergency Medical Center, visited the site on several occasions to be briefed about site activities and provide the U.S. EPA with information regarding local emergency medical capabilities. The Albany Emergency Medical Center is located directly north of the site, across State Street.

2.3 FEDERAL AGENCIES

The U.S. EPA provided all monetary resources for the removal action. Under direct guidance of the OSC, the removal effectively mitigated existing environmental and public health threats posed by conditions at the site.

3.0 PROBLEMS ENCOUNTERED

3.1 Removal Cost Management System

A number of difficulties were encountered as Maecorp and TAT personnel conducted cost-tracking using the Removal Cost Management System (RCMS). On average, approximately 6 TAT-hours were required each day to complete cost-tracking paperwork. When RCMS is

functioning properly, approximately 1.5 TAT hours per day are required to review a 1900-55 form and complete a Daily Cost Summary. The Maecorp field clerk also devoted approximately one hour per day to nonroutine RCMS problems. In general, the problems stemmed from the use of an interface system of which Maecorp is the sole user in Region V. The U.S. EPA may need to oversee further training of both TAT and Maecorp to establish a uniform protocol for transferring personnel and equipment rates, and mobilization and demobilization flags.

3.2 Disposal of PPE

Disposal of all waste streams except two drums of PPE was accomplished by December 4, 1989. Although the U.S. EPA efficiently coordinated all site activities so that the removal could be completed within six months, the project nevertheless nearly exceeded a one-year lifespan because of difficulty in obtaining disposal acceptance for the two drums of PPE. The PPE in question were yellow PVC coveralls supplied by Maecorp which were worn during the decontamination and removal of the cyanide plating equipment.

Although cyanide residues were successfully rinsed from the PVC coveralls using a sodium hypochlorite solution, the coveralls still did not meet Land Ban disposal requirements, thus preventing landfilling of the material. Toxicity Characteristic Leaching Procedure (TCLP) analysis on the coveralls revealed the material exceeded Land Ban standards of cadmium and lead. TCLP analysis on a sample of unused coveralls from the same manufacturer revealed that a new PVC suit also leaches elevated levels of cadmium and lead. Using this evidence that the virgin material and not the Superfund waste was the source of the metals, OSC Theisen sent a letter to Sylvia Lawrence, Director of the Office of Solid Waste in Washington, D.C., through David Ullrich, Director of the Waste Management Division, in late May 1990, apprising her of the situation and the upcoming (June 19, 1990) one-year project deadline. When a timely response was not received, the OSC exercised his only disposal option, namely incineration of the metal-contaminated waste, at an extra cost to the federal government of several thousand dollars.

3.3 Waste Minimization

At the outset of the project, OSC Theisen, the Response Manager, and the TAT designed a system for minimizing the quantity of contaminated personal protective equipment that would be generated during the removal. All site personnel were instructed to separate inner gloves, booties, and coveralls, which did not come in contact

with hazardous materials, from the outer clothing which would come in contact with wastes and therefore be considered hazardous according to 40 CFR 261.3 (b)(3). If this foresight had not been exercised, the quantity of "hazardous" waste requiring incineration could have been much greater.

4.0 RECOMMENDATIONS

Before any on-site treatment is considered at any plating facility, a treatability study has to be done in order to determine if it would be cost effective, over off-site disposal. I did one at this site and it was determined that my contractor could not do the treatment cheaper than an off-site disposal facility.